WARNING: ALL INDIVIDUALS INTERESTED IN BIDDING ON THIS PROJECT MUST OBTAIN THE FINAL PLANS AND SPECIFICATIONS FROM THE DEPARTMENT MANAGING THE PROJECT OR AS OTHERWISE STATED IN THE ADVERTISEMENT FOR BIDS FOR THE PROJECT. DO NOT USE THE PLANS AND SPECIFICATIONS POSTED ON THE CLERK OF THE BOARD'S WEBSITE FOR BIDDING ON THIS PROJECT.

PFS CORPORATION
Corporate
1507 Matt Pass
Cottage Grove, WI. 53527
Phone: (608)839-1013 Fax: (608)839-1014

APPLICATION FOR PLAN APPROVAL

Commercial Modular (CM)/Special Purpose Commercial Modular (SPCM)
California Code of Regulations Title 25 Chapter 3 Subchapter 2

Complete a separate application for each plan submittal. Provide not less than three (3) complete sets of plans, calculations and/or test data to support plans submitted.

Manufacturer: CXT Inc.

Address: 6701 E. Flamingo Ave Bldg 300

City/State/Zip: Nampa, ID 83687

Contact Person: Nate Penner Date 07/06/2023

TYPE OF SUBMITTAL
- [x] New model
- [ ] Resubmission
- [ ] Revised Model*
  {Provide written instructions per 4876 (e)}

TYPE OF UNIT
- [x] Commercial Modular (*CM*)
- [ ] Special Purpose (*SPCM*)
- [ ] ______

Model I.D.: CRS-108

Description of Submittal: Gunnison BATHROOM BUILDING WITH CHASE

*Description of Modification: ______

Note: For Commercial Modular submittal, indicate the following design parameters:

Roof Live Load 30 *psf*
Floor Live Load 400 *psf*
Wind Speed (3-sec) 150 *mph*
Seismic Design Category E

Occupancy Classification U
Type of Construction V-B
Exposure Category C
Climate Zone N.A.

For PFS Use Only: Status: [x] Approved [ ] Rejected

Approved by: Ian Lehrer
Date Approved: 07/20/2023

Plan Approval No: 23-006080
Date Expires: 10/31/2024

Mail To: **State of California**
HCD Northern Area Office
9342 Tech Center Drive #550
Sacramento, CA. 95826

PFS Form 71WI
3/6/06 MB
Rev. 2/18/13 RG
Rev for fillable 2/20/13 DN

Date Received at PFS:___________________
IBC Transmittal No. (by PFS):___________________
Project No. (by PFS):__________________

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. CORTEX SECTIONAL CRS-108
Manufacturer's Name: CXT
Plant(s) at which model will be produced Nampa, ID
Check One: ✔ NEW MODEL __________ Revised Model*

TECHNICAL DATA

	Conforms Yes	Conforms No	Conforms 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: California

*Description of Modification:___________________

Requested by: CHENG-LUNG PECK Date: 7/2/2023
(designer)

For PFS Use

Staff Plan Reviewer__________ IBC Certification #:__________ Date: 7/20/2023

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

CORTEZ SECTIONAL

NOTES

1. BUILDING IS DESIGNED TO COMPLY WITH THE 2022 CALIFORNIA BUILDING CODE (CBC).
2. DESIGN COMPLIES WITH THE PROVISIONS OF THE 2022 CBC CODE FOR THE FOLLOWING LOADS:
   - GROUND SNOW LOAD = 170 PSF
   - ROOF SNOW LOAD = 142 PSF
   - FLOOR LOAD = 400 PSF
   - IBC DESIGN SPECTRAL RESPONSE S_S = 1.714 S_1 = 1.389
   - SITE CLASS D
   - RISK CATEGORY: II
   - SEISMIC DESIGN CATEGORY: E
   - BEARING WALL SYSTEM R = 4.0
   - WIND – V = 150MPH
   - WIND – V_{ASD} = 116MPH
   - WIND EXPOSURE C
   - ***BUILDING IS NOT TO BE PLACED IN A LOCATION WHERE LOADS EXCEED THE VALUES PROVIDED ABOVE
   - ***BUILDING IS NOT TO BE PLACED IN A WIND BORNE DEBRIS REGION
3. CONSTRUCTION TYPE: V-B
   OCCUPANCY: U
   OCCUPANT LOAD: 5
   EXTERIOR WALLS: 1-HR RATED PER CBC TABLE 721.1(2), ITEM 4-1.1
   MINIMUM FIRE SEPARATION DISTANCE: 10' PER CBC TABLE 705.8
   MAXIMUM UNPROTECTED OPENING AREA: 6.22% (WALL W3, W4, W8, & W9)
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.
   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. BACK OF PANELS TO HAVE SMOOTH TROWEL FINISH UNO. ALL SURFACES TO BE TEXTURED ARE NOTED ON PANEL DWG'S
7. REFER TO SEPARATE CXT INCORPORATED SPECIFICATIONS COVERING DESIGN, MATERIALS, PRODUCTION, AND INSTALLATION CRITERIA FOR SPECIFIC STYLE OF BUILDING.
8. ALL REBAR BENDS ARE TO HAVE A MINIMUM RADIUS OF 6x THE BAR DIAMETER
9. INSTALLATION TO MEET APPLICABLE LOCAL, STATE & FEDERAL CODES, BY OTHERS.
10. ADEQUATE PLUMBING FACILITIES MUST BE PROVIDED IN ACCORDANCE WITH 2022 CBC (NOT BY CXT)
11. ACCESSIBLE ROUTE TO BE PROVIDE BY OTHER ON SITE (NOT BY CXT).

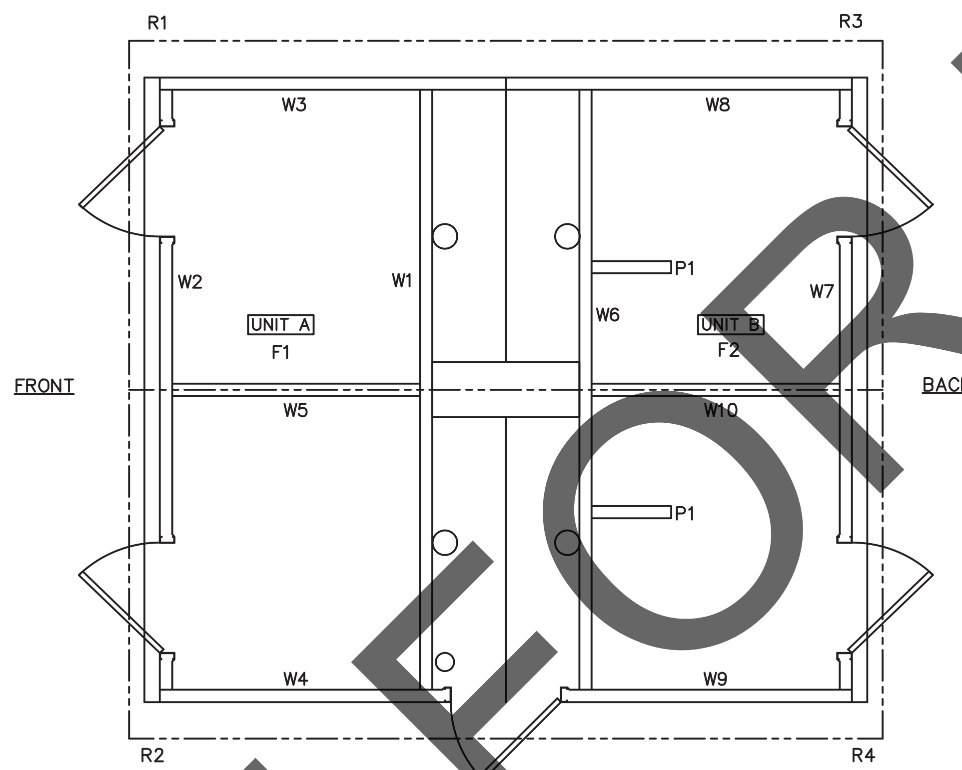
MANUFACTURED BY:

CXT INC. (ID)
6701 E. FLAMINGO AVE BLDG 300
NAMPA, ID 83687

SITE ADDRESS:

MOJAVE DRY CAMPSITE
VICTORVILLE, CA

PANEL MARK NO. KEY PLAN



INDEX OF DRAWINGS

REGISTERED PROFESSIONAL ENGINEER
WILLIAM RICHARD HEIDEN, III
74138
CIVIL
STATE OF CALIFORNIA

July 15, 2023

APPLICABLE CODES

2022 CALIFORNIA BUILDING CODE (CBC)
2022 CALIFORNIA PLUMBING CODE (CPC)
2022 CALIFORNIA MECHANICAL CODE (CMC)
2022 CALIFORNIA ELECTRICAL CODE (CEC)
2022 CALIFORNIA ENERGY CODE

APPROVED: STATE OF CA - CERTIFIED DAA

Based on the requirements of title 25 California code of regulations
Chapter 3 subchapter 2 Commercial Modular

Date: 07-20-2023 Expires: 10-31-2024

Approval # PFS: 23-006080

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PFS CORPORATION - Cottage Grove, WI

SPECIAL CONDITIONS AND/OR LIMITATIONS

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

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
CORTEZ SECTIONAL
BUILDING NUMBER CRS-108

NOTICE

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"

CALIFORNIA STATE TAG, APPROVAL, AND PE DRAWINGS (ECC ONLY) REQUIRED

WALL TEXTURE: SPLIT FACE BLOCK
WALL COLOR: SAGE GREEN

ROOF TEXTURE: CEDAR SHAKE
ROOF COLOR: NUSS BROWN

TRIM PAINT: DTM ALKYD ENAMEL BROWN

SEALER: 2K ANTI-GRAFFITI

PACKAGE: MARINE – SHOWERS ONLY

REV.	DESCRIPTION	APPROVAL	DATE

SCALE	3/16" = 1'-0"	DATE	6-9-2023
DRAWN	G.OGG	FILE NO.	CRS-108
CHECKED	MCT	PLOT	64

COVER SHEET

DWG NO.	SHEET	REV.
CRS-01	1/29	0

CORTEZ SECTIONAL

RECOMMENDED HANDLING AND INSTALLATION INSTRUCTIONS

NOTES:

1. THE CORTEZ SECTIONAL STYLE BUILDING CONSISTS OF TWO SEPARATE UNITS TO BE PLACED AND JOINED AT THE PROJECT SITE. PROPER SITE PREPARATION AND HANDLING IS ESSENTIAL FOR THE SAFE AND PROPER INSTALLATION OF THE BUILDING.
2. PROVIDE SHALLOW TRENCH WITH ROLLED EDGES ALONG BUILDING JOINT LINES TO PREVENT TRAPPING MATERIAL BETWEEN UNITS BEING DRAWN TOGETHER.
3. PLACE UNITS AS CLOSE TO ONE ANOTHER AS POSSIBLE. SPACE BETWEEN UNITS SHOULD NOT EXCEED 1" AT INITIATION OF POST-TENSIONING. MAXIMUM ALLOWABLE FINISH JOINT SPACE BETWEEN UNITS SHALL BE 1/2".
4. POST-TENSIONING TO DRAW UNITS INTO CONTACT SHALL BE ACCOMPLISHED WITH EQUIPMENT PROVIDED BY CXT BY PROPERLY TRAINED PERSONNEL. INSTRUCTIONS PROVIDED BY CXT SHALL BE CAREFULLY ADHERED TO. ALL NECESSARY SAFETY PRECAUTIONS SHALL BE TAKEN BY INSTALLATION PERSONNEL. STRESS TENDONS TO DRAW UNITS TOGETHER AND TO RETAIN A MINIMUM EFFECTIVE FORCE IN EACH TENDON OF 2 KIPS AFTER ALL LOSSES.
5. AFTER COMPLETION OF BUILDING PLACEMENT, BLOCKOUTS AT POST-TENSIONING ANCHORAGE POINTS SHALL BE FILLED WITH NON-METALLIC, NON-SHRINK GROUT. PROVIDE SMOOTH, NEAT FINISH COMPATIBLE WITH SURROUNDING CONCRETE SURFACES. MATCH CONCRETE COLOR.
6. PROVIDE UTILITY CONNECTIONS (PLUMBING & ELECTRICAL) AS REQUIRED AND/OR AS CALLED FOR ON THE DRAWINGS.
7. FILL FLOOR BLOCKOUTS AFTER COMPLETION OF UTILITY HOOKUPS WITH CONCRETE. SLOPE TO DRAIN.

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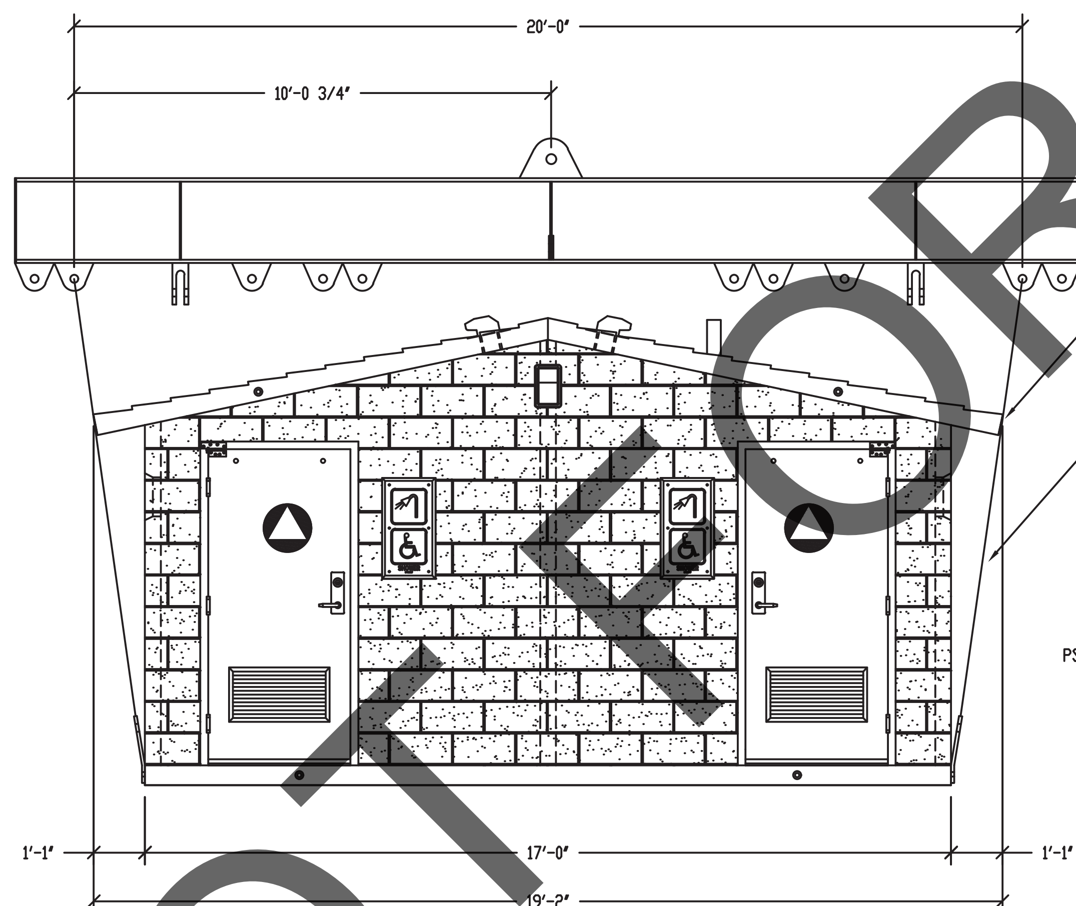
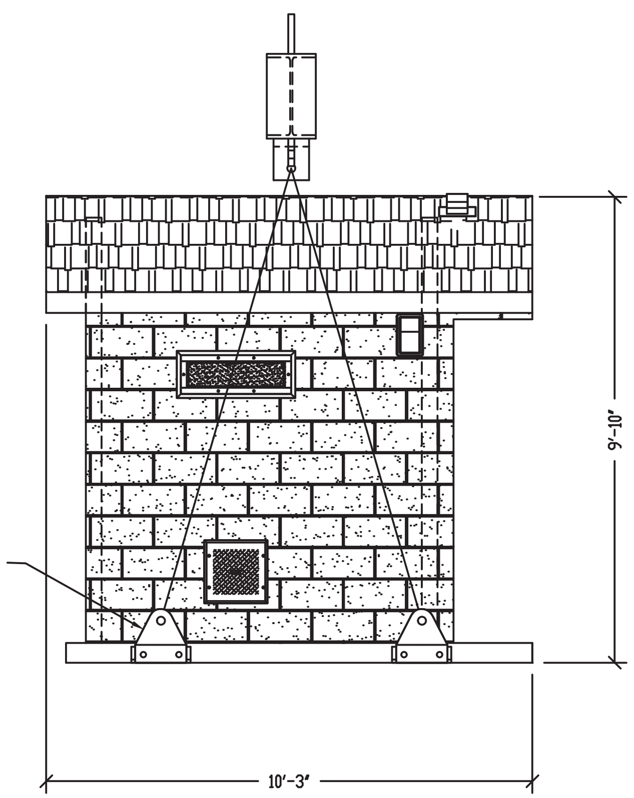
PFS

PFS CORPORATION - Cottage Grove, WI

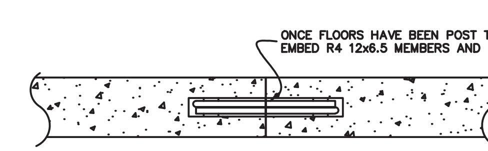




CRANE LIFTING SCHEMATIC - UNITS A & B

SHIPPING WEIGHTS AND DIMENSIONS				
SECTION	WEIGHT	LENGTH	WIDTH	HEIGHT
A (LH)	43,100	19'-2"	10'-3"	9'-10"
B (RH)	43,100	19'-2"	10'-3"	9'-10"

FIELD SECTIONAL CONNECTION DETAIL



ELEVATION VIEW
FINAL VIEW

EMBEDDED MATERIALS	
ITEM	QTY
P.T. CABLE 26'-0"	4
CHUCKS & WEDGES	8
GROUT (BAGS)	4
HILTI HIL HY-200 A	2
6.5"x12" R4	4

CU. FT. CONC.	SQ. FT. W.W.F.

APPROXIMATE WEIGHT

REGISTERED PROFESSIONAL ENGINEER
WILLIAM RICHARD HEIDEN, III
74138
CIVIL
STATE OF CALIFORNIA

July 15, 2023

LBFoster
CXT® Products

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

PROJECT TITLE
CORTEZ SECTIONAL
BUILDING NUMBER CRS-108

REV.	DESCRIPTION	APPROVAL	DATE

SCALE	1/4"=1'-0"	DATE	6-9-2023
DRAWN	G.OGG	FILE NO.	CRS-108
CHECKED	MCT	PLOT	48

HANDLING INSTRUCTIONS

DWG NO.	SHEET	REV.
CRS-02	2 / 29	0

DOOR SCHEDULE

	TYPE	FRAME	DOOR SIZE	MATERIAL	DOOR PREP/LATCH	VENTILATION
	GLAZING	STOP	SWEEP	THRESHOLD	HINGES	KICK PLATE
A	SINGLE	3/0 x 6/8 x 3-3/4"	3/0 x 6/8 x 1-3/4"	GALVANIZED	LH REVERSE - DEADBOLT - MORTISE LATCH	LOUVER
	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
B	SINGLE	3/0 x 6/8 x 3-3/4"	3/0 x 6/8 x 1-3/4"	GALVANIZED	RH REVERSE - DEADBOLT - MORTISE LATCH	LOUVER
	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
C	SINGLE	3/0 x 6/8 x 3-3/4"	3/0 x 6/8 x 1-3/4"	GALVANIZED	RH REVERSE - DEADBOLT - PASSAGE LATCH	N/A
	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-2 EMBED
B	MS-4 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.

LIGHTING AND VENTILATION REQUIREMENTS

	ADA RESTROOM'S	ADA SHOWER	CHASE
AREA	54.00 SQ FT	54.00 SQ FT	84.45 SQ FT
REQUIRED VENTILATION	2.16 SQ FT	2.16 SQ FT	3.38 SQ FT
PROVIDED VENTILATION	20.87 SQ FT	22.79 SQ FT	20.00 SQ. FT.
REQUIRED NATURAL LIGHTING	4.32 SQ FT	4.32 SQ FT	6.76 SQ FT
PROVIDED NATURAL LIGHTING	1.00 SQ FT ***	1.00 SQ FT ***	0.00 SQ FT ***

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

APPROVED: STATE OF CA - CERTIFIED DAA

Based on the requirements of title 25 California code of regulations
Chapter 3 subchapter 2 Commercial Modular

Date: 07-20-2023 Expires: 10-31-2024

Approval # PFS: 23-006080

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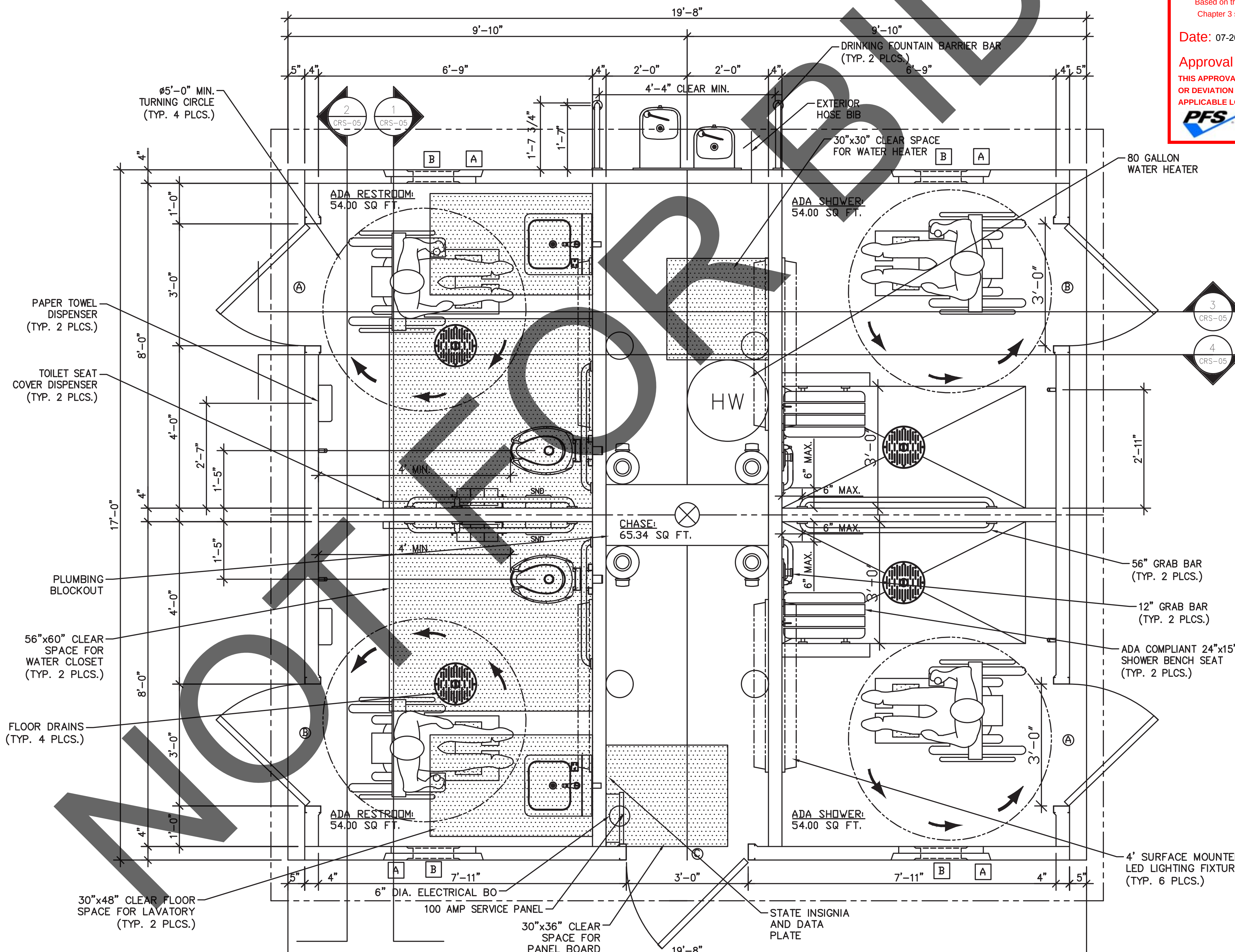
PFS

PFS CORPORATION - Cottage Grove, WI



REGISTERED PROFESSIONAL ENGINEER
WILLIAM RICHARD HEIDEN, III
74138
CIVIL
STATE OF CALIFORNIA

July 15, 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
CORTEZ SECTIONAL
BUILDING NUMBER CRS-108

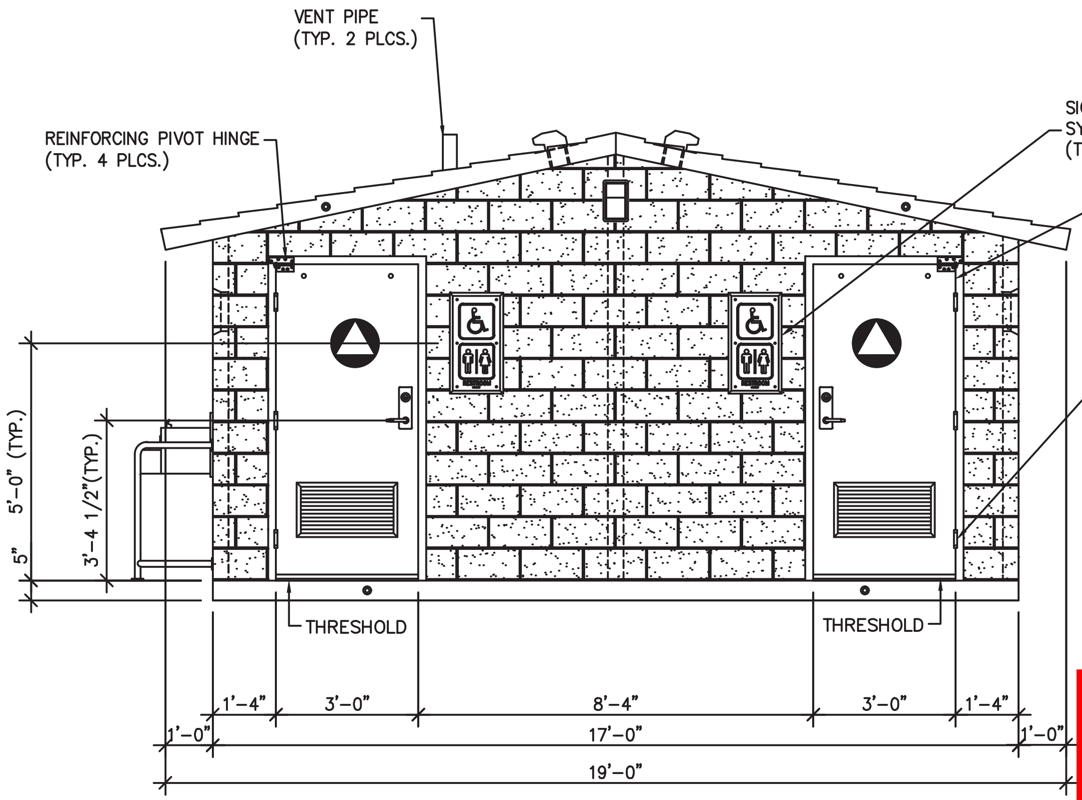
NOTICE

REV.	DESCRIPTION	APPROVAL	DATE

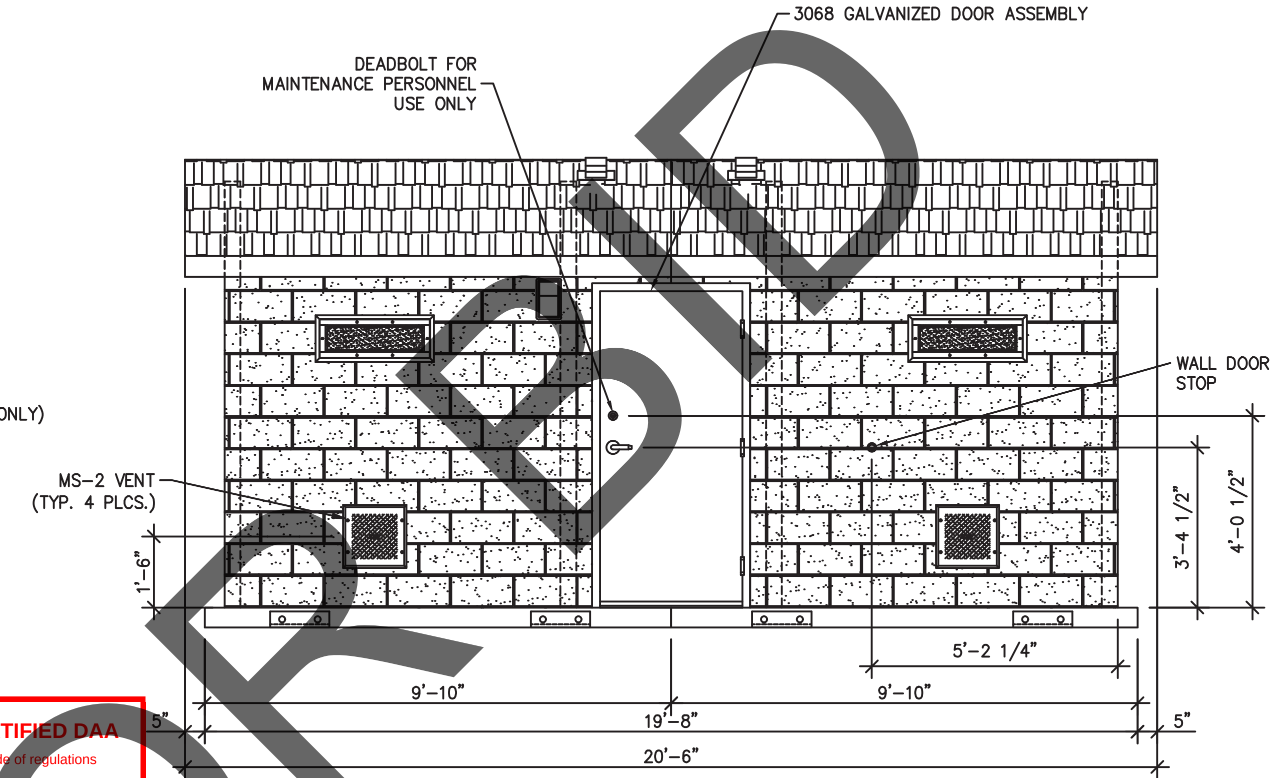
SCALE	3/8"=1'-0"	DATE	6-9-2023
DRAWN	G.OGG	FILE NO.	CRS-108
CHECKED	MCT	PLOT	32

FLOOR PLAN

DWG NO.	SHEET	REV.
CRS-03	3 / 29	0



FRONT ELEVATION



RH SIDE ELEVATION

APPROVED: STATE OF CA - CERTIFIED DAA

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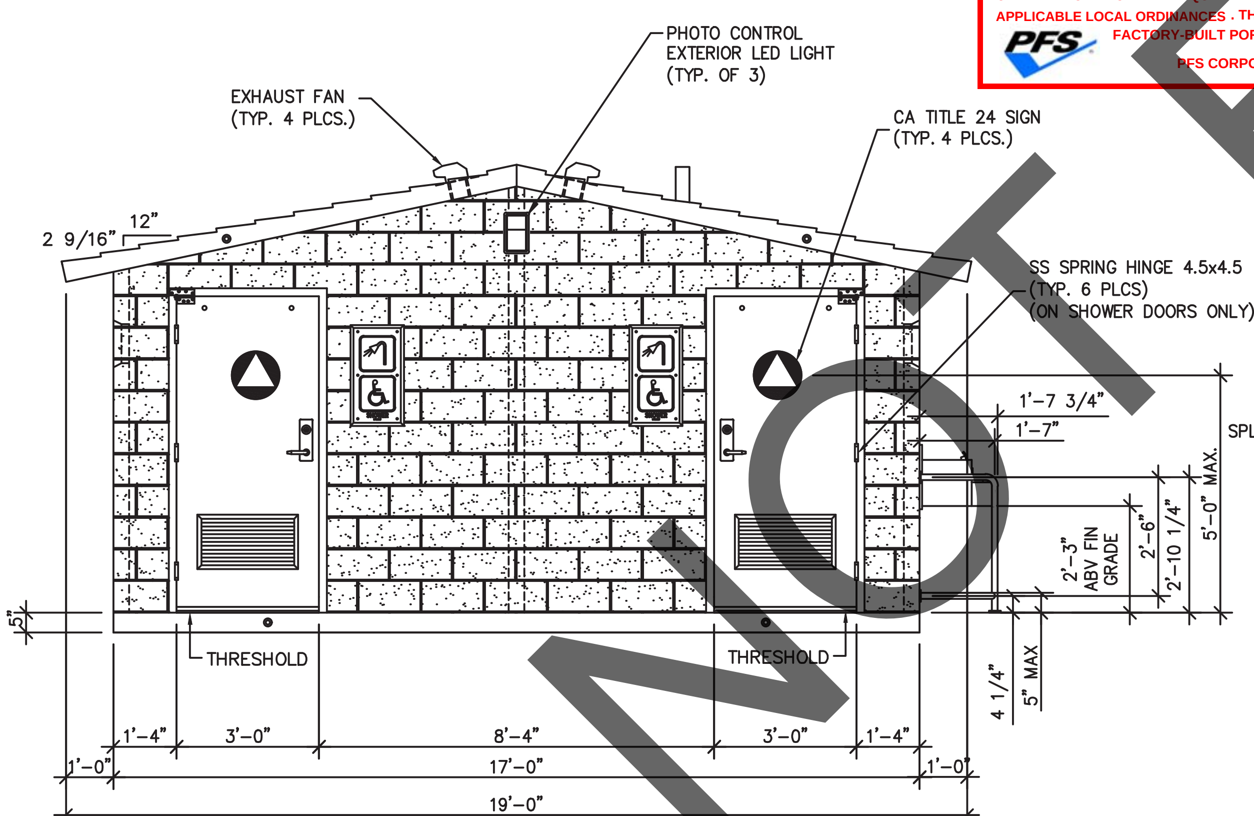
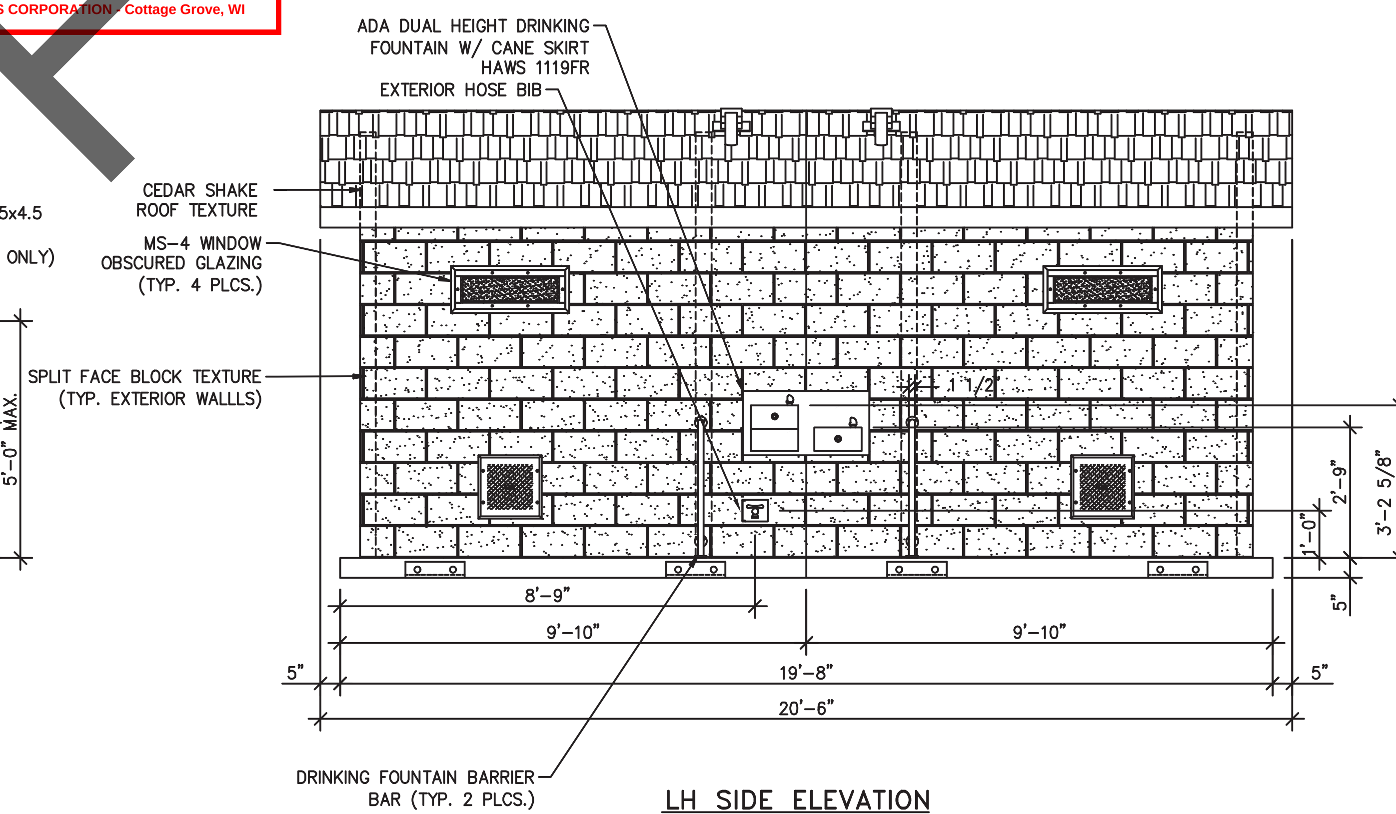


REAR ELEVATION



LH SIDE ELEVATION

EMBEDDED MATERIALS	
ITEM	QTY
3068 GALV MORTISE DOOR ASSEMBLY	4
SPRING HINGE 4.5x4.5	9
HAWS DRINKING FOUNTAIN	1
EXTERIOR HOSE BIB	1
REINFORCING PIVOT HINGE	4
WALL DOOR STOP	1
MS-4 WINDOW	4
SI-2	4
SS SPRING HINGE 4.5x4.5	6
DOOR LOUVER	4
CA TITLE 24 SIGN	4
BARRIER BAR	2
MS-2 VENT	4
3068 GALV DOOR ASSEMBLY	1

CU. FT. CONC.	SQ. FT. W.W.F.

APPROXIMATE WEIGHT

REGISTERED PROFESSIONAL ENGINEER
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NOTICE

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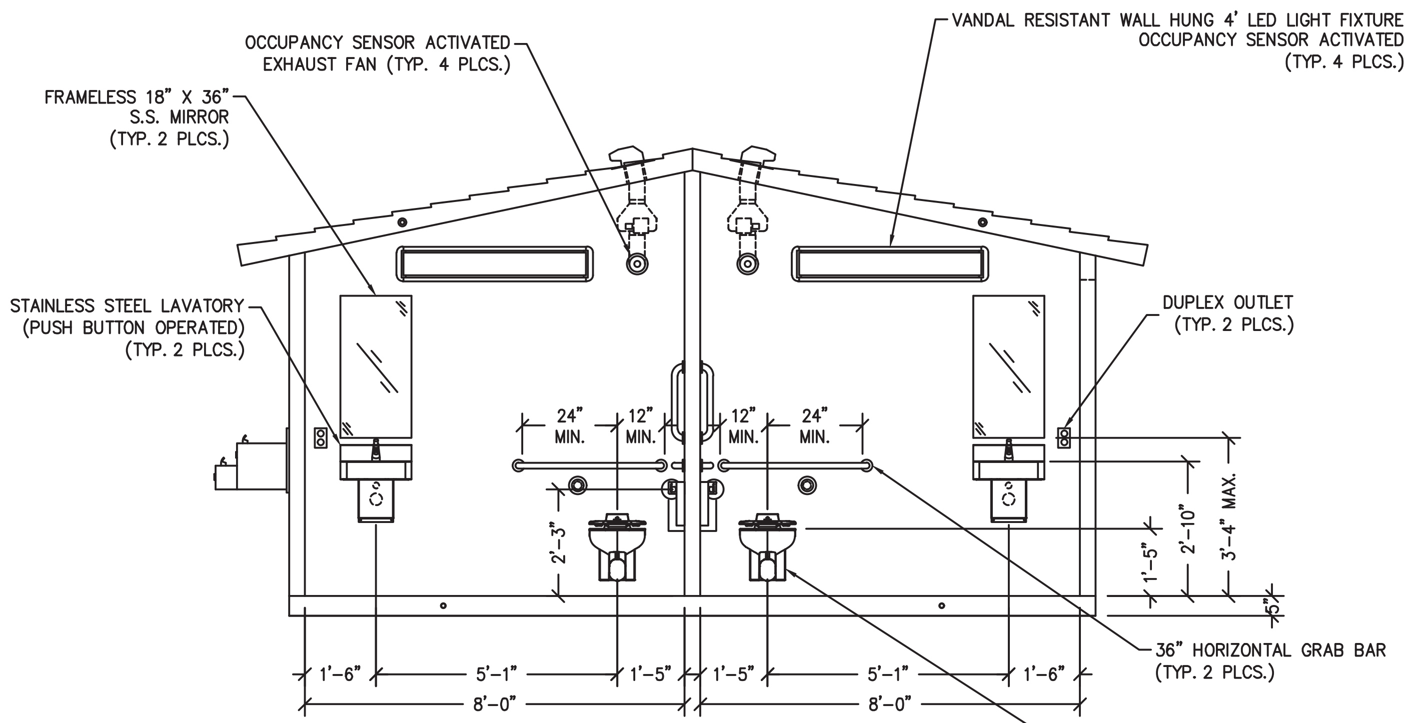
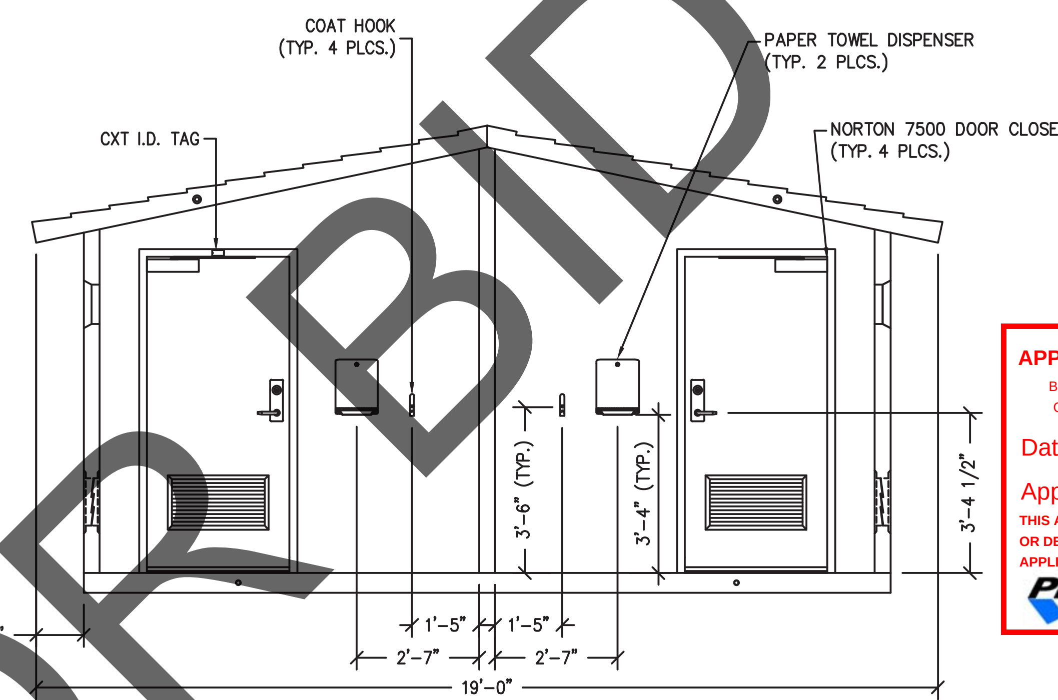
SCALE	1/4"=1'-0"	DATE	6-9-2023
DRAWN	G.OGG	FILE NO.	CRS-108
CHECKED	MCT	PLOT	48

BUILDING ELEVATIONS

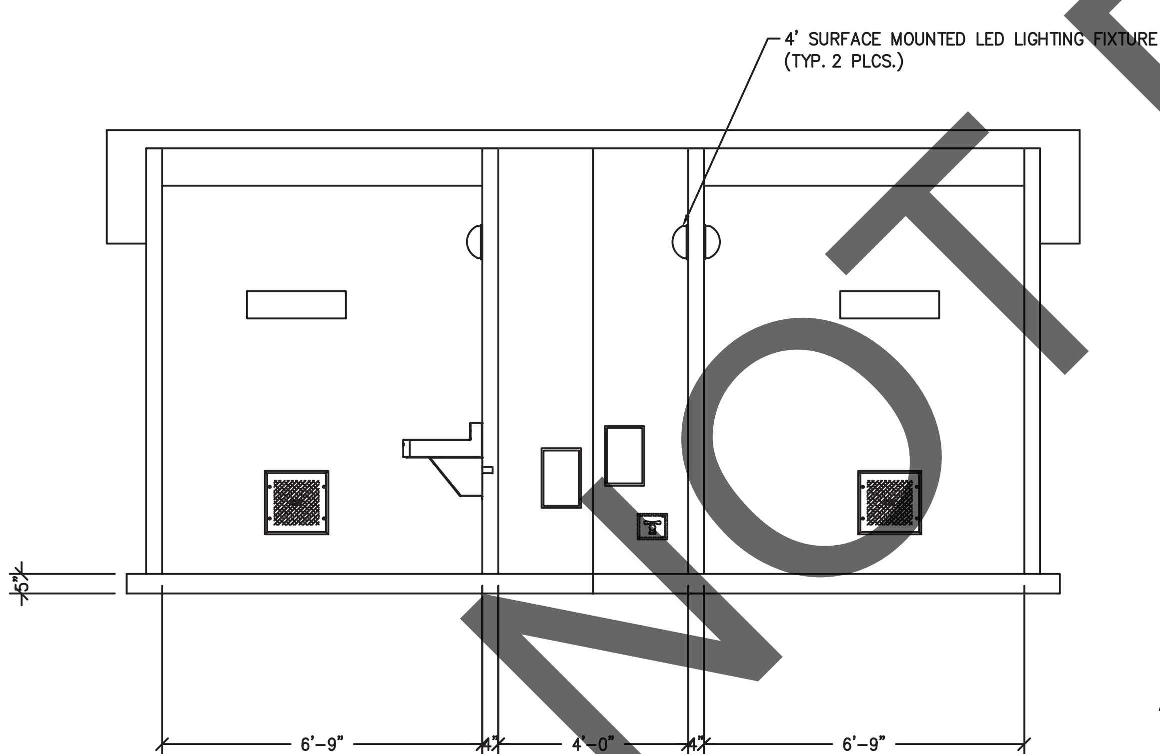
DWG NO.	SHEET	REV.
CRS-04	4 / 29	0



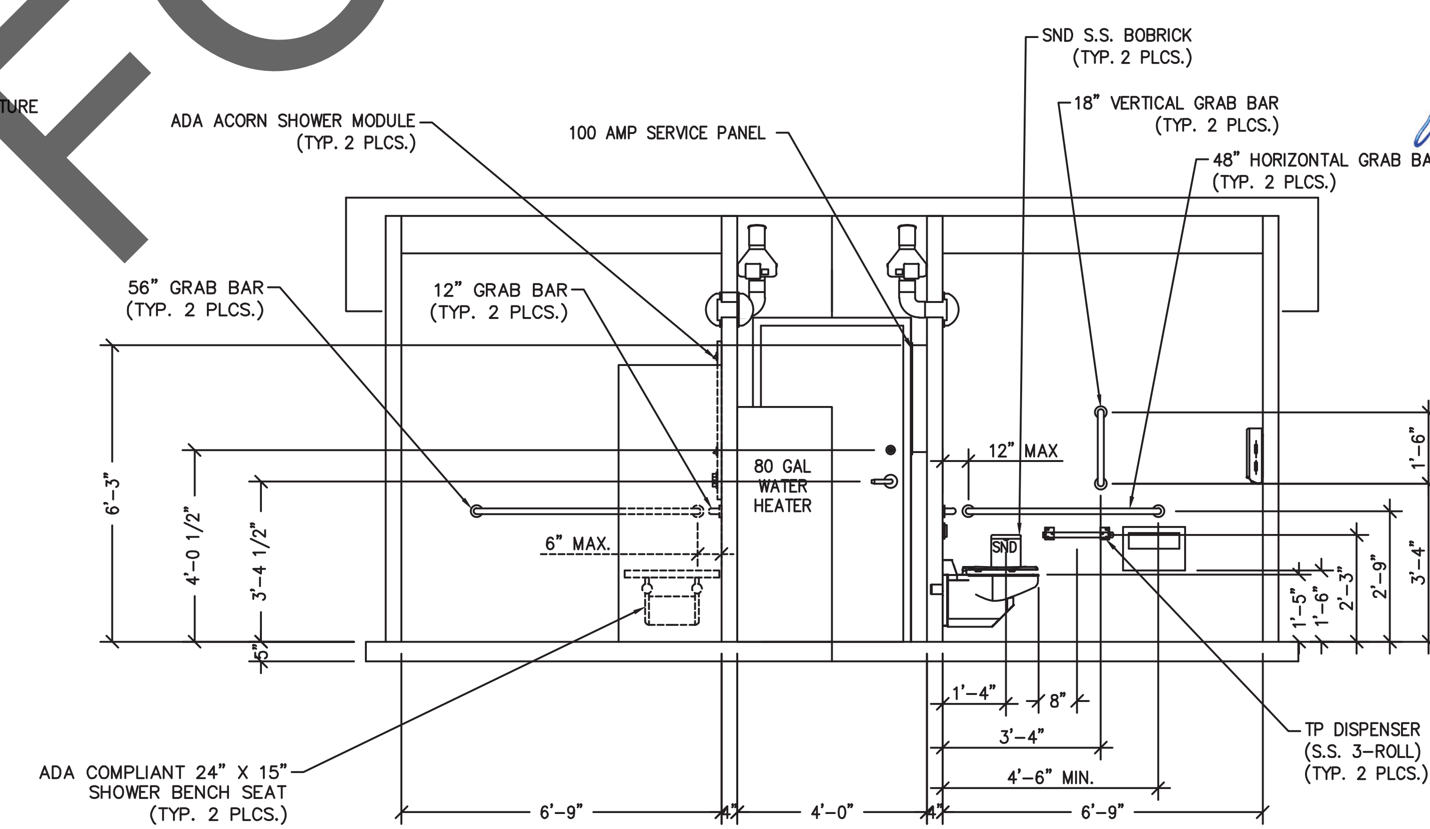
1 INTERIOR ELEVATION – FRONT VIEW



2 INTERIOR ELEVATION – EXTERIOR WALL VIEW
WOMEN'S OPPOSITE HAND



3 INTERIOR ELEVATION – LAVATORY SIDE VIEW



4 INTERIOR ELEVATION – WATER CLOSET & SHOWER SIDE VIEW

MATERIALS

ITEM	QTY
CXT I.D. TAG	1
TOILET PAPER ROLL	6
TP DISPENSER	2
18" GRAB BAR	2
48" GRAB BAR	2
36" GRAB BAR	2
COAT HOOK	4
NORTON DOOR CLOSERS	4
PAPER TOWEL DISP. B-262	2
SND S.S. BOBRICK	2
TOILET SEAT COVER DISPENSER	2
ADA ACORN SHOWER MODULE	2
24"x15" SHOWER BENCH SEAT	2
12" GRAB BAR	2
56" GRAB BAR	2

APPROVED: STATE OF CA - CERTIFIED DAA
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PFS CORPORATION - Cottage Grove, WI

APPROXIMATE WEIGHT

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NOTICE

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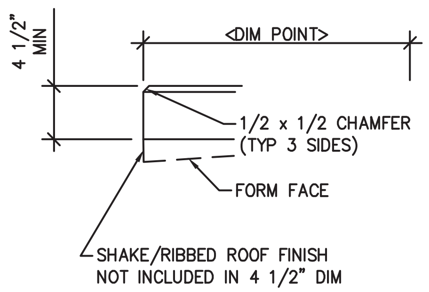
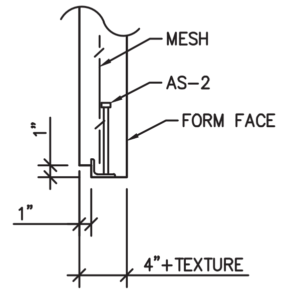
CHECKED	MCT	PLOT	48

INTERIOR ELEVATIONS

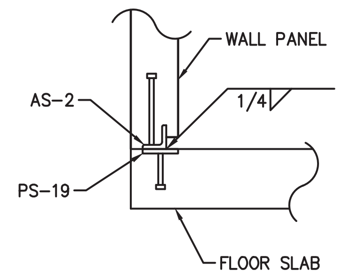
DWG NO.	SHEET	REV.
CRS-05	5 / 29	0



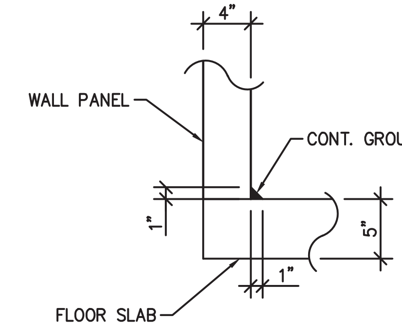
1 TYPICAL ROOF SLAB EDGE
SCALE: 3/4"=1'-0"



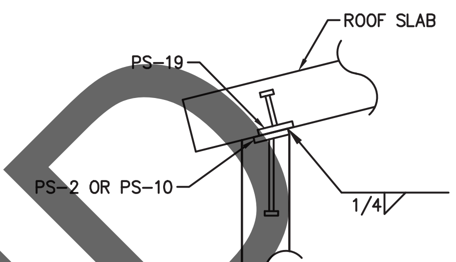
2 AS-2 CAST DETAIL
SCALE: 3/4"=1'-0"



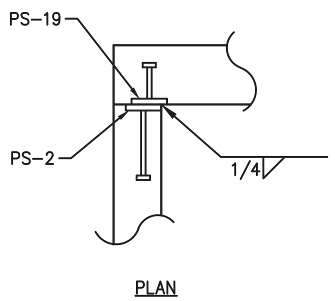
3 TYPICAL WALL TO FLOOR SLAB WELDED CONNECTION
SCALE: 3/4"=1'-0"



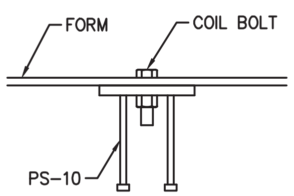
4 TYPICAL WALL TO FLOOR SLAB JOINT DETAIL
SCALE: 3/4"=1'-0"



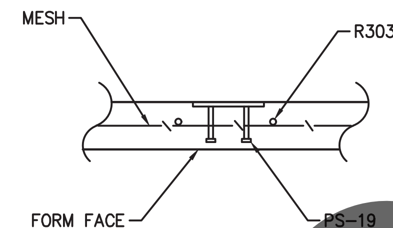
5 TYPICAL WALL TO ROOF SLAB WELDED CONNECTION
SCALE: 3/4"=1'-0"



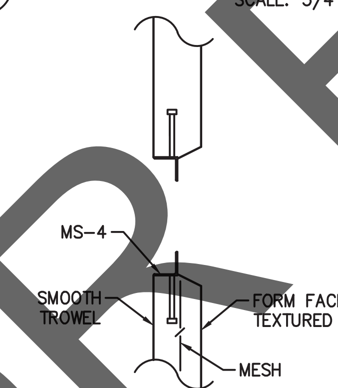
6 TYPICAL WALL TO WALL PANEL WELDED CONNECTION
SCALE: 3/4"=1'-0"



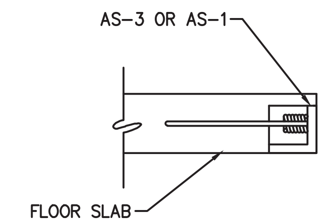
7 PS-10 CASTING DETAIL
SCALE: 1"=1'-0"



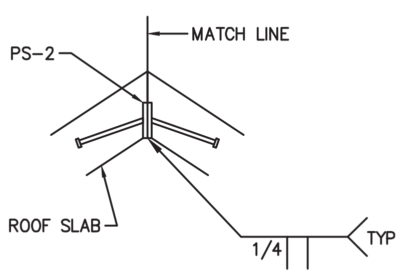
8 PS-19 CASTING DETAIL
SCALE: 3/4"=1'-0"



9 MS-4 EMBED CASTING DETAIL
SCALE: 3/4"=1'-0"



10 FLOOR LIFT PLATE DETAIL
SCALE: 3/4"=1'-0"



11 ROOF PEAK WELDMENT DETAIL
SCALE: 3/4"=1'-0"

APPROVED: STATE OF CA - CERTIFIED DAA

Based on the requirements of title 25 California code of regulations
Chapter 3 subchapter 2 Commercial Modular

Date: 07-20-2023 Expires: 10-31-2024

Approval # PFS: 23-006080

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PFS CORPORATION - Cottage Grove, WI

REGISTERED PROFESSIONAL ENGINEER
WILLIAM RICHARD HEIDEN, III
74138
CIVIL
STATE OF CALIFORNIA

July 15, 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

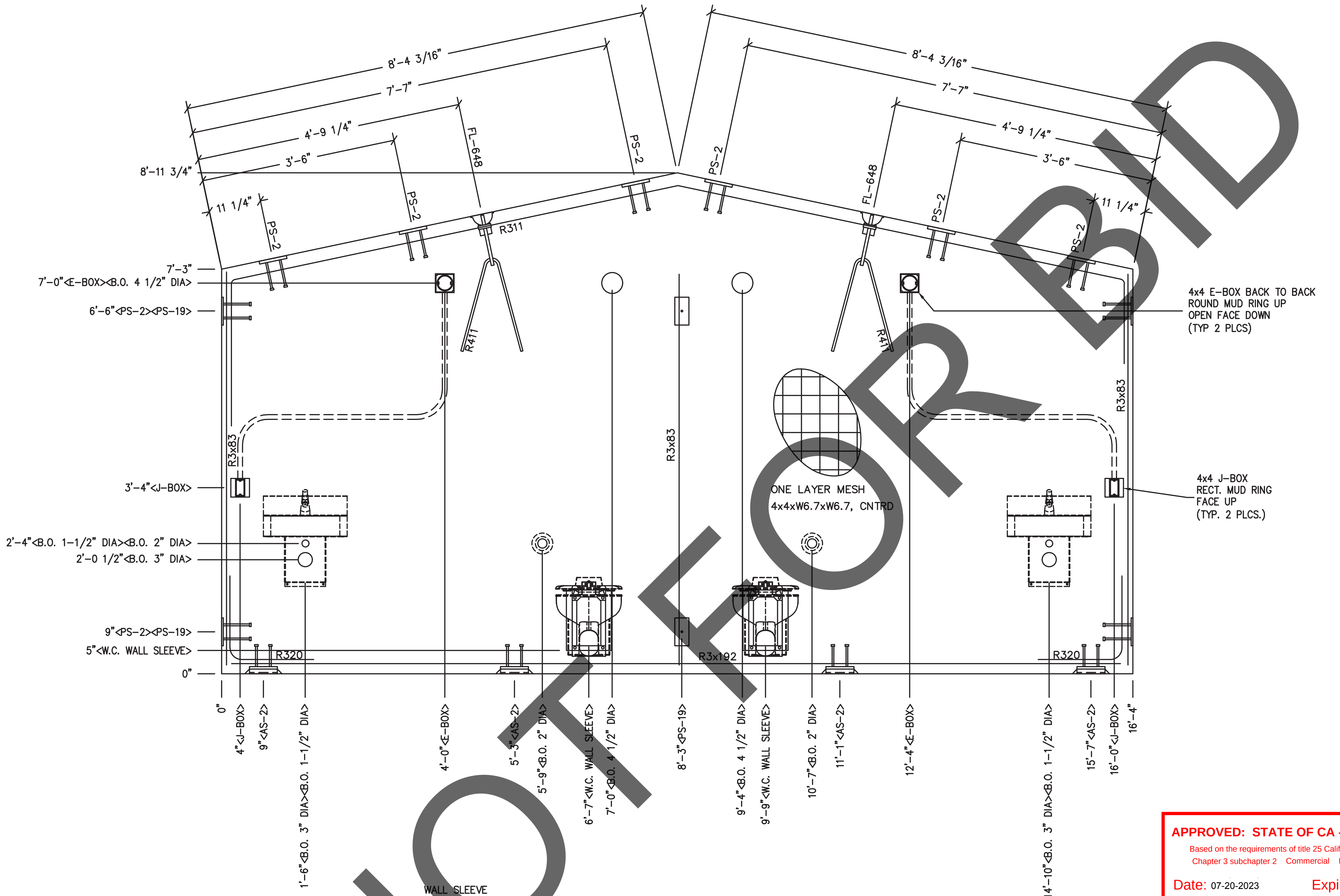
PROJECT TITLE
CORTEZ SECTIONAL
BUILDING NUMBER CRS-108

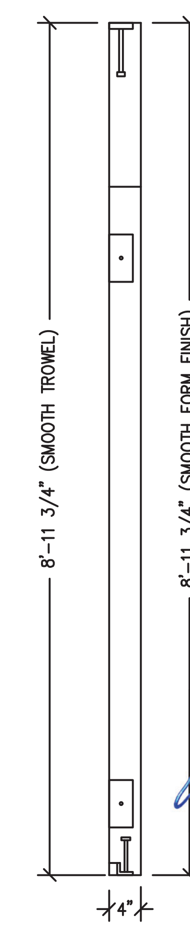
REV.	DESCRIPTION	APPROVAL	DATE

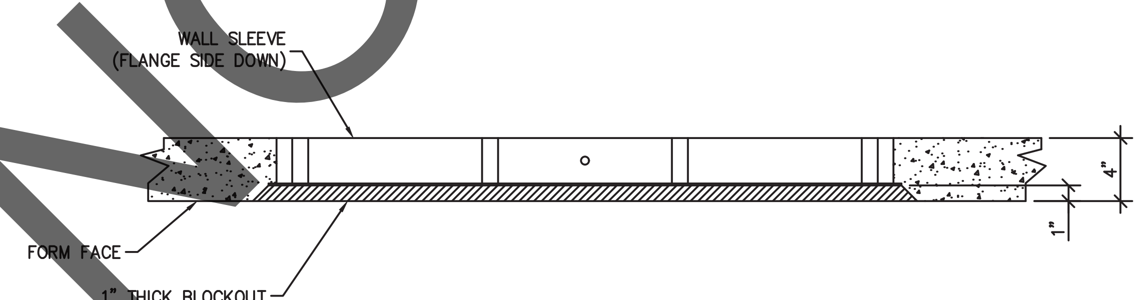
SCALE	3/4"=1'-0"	DATE	6-9-2023
DRAWN	G.OGG	FILE NO.	CRS-108
CHECKED	MCT	PLOT	16

CASTING DETAILS

DWG NO.	SHEET	REV.
CRS-06	6 / 29	0







WALL SLEEVE BLOCKOUT DETAIL

APPROVED: STATE OF CA - CERTIFIED DAA

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Chapter 3 subchapter 2 Commercial Modular

Date: 07-20-2023 Expires: 10-31-2024

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PFS CORPORATION - Cottage Grove, WI

NOTES:
1. EXCEPT R311 & R411, REINFORCING BARS TO BE PLACED IN PAIRS ONE EACH FACE OF PANEL W/ 3/4" MIN. COVER. ALL OTHER BARS TO BE CENTERED IN PANEL.

EMBEDDED MATERIALS

ITEM	QTY
AS-2	4
PS-2	10
PS-19	2
R411	2
R311	1
R320	4
R3x83	6
R3x192	2
FL-648	2
B.O. 4 1/2" DIA	2
W.C. WALL SLEEVE	2
B.O. 2" DIA	2
B.O. 3" DIA	2
4x4 E- BOX	4
ROUND MUD RING	2
RECT MUD RING	2
B.O. 1 1/2" DIA	2
4x4 J-BOX	2

CU. FT. CONC.	SQ. FT. W.W.F.
44.1 (1.63)	133

APPROXIMATE WEIGHT
6,616

REGISTERED PROFESSIONAL ENGINEER
WILLIAM RICHARD HEIDEN, III
74138
CIVIL
STATE OF CALIFORNIA

July 15, 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
CORTEZ SECTIONAL
BUILDING NUMBER CRS-108

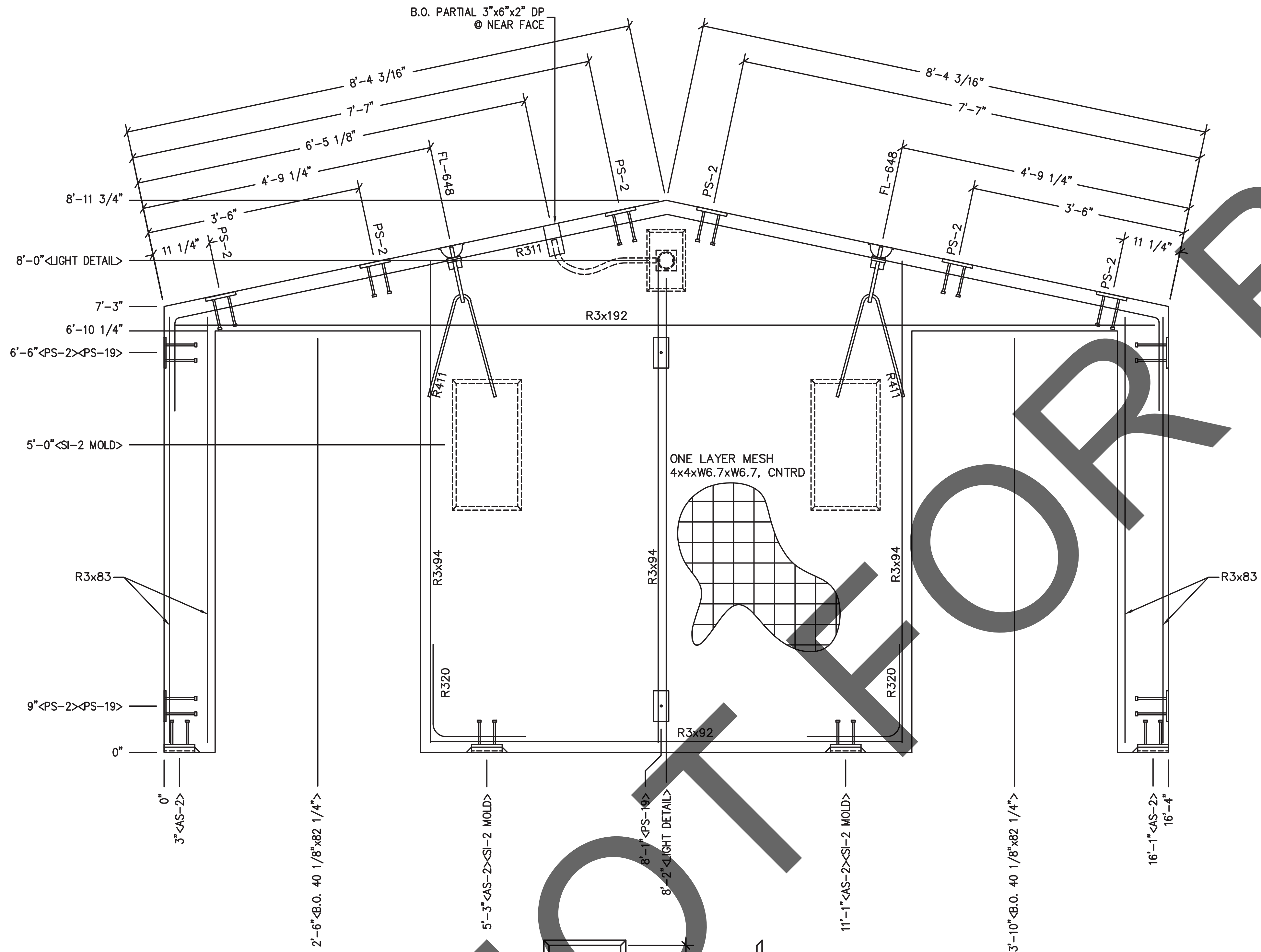
NOTICE

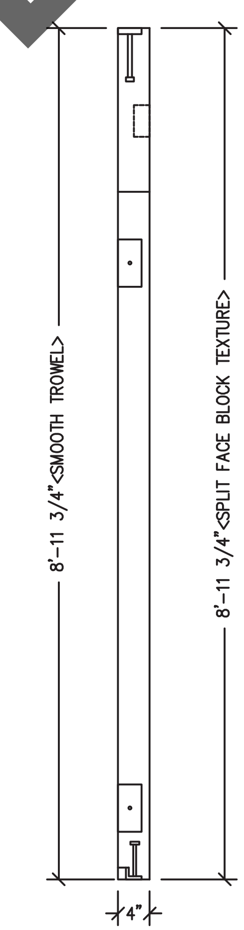
REV.	DESCRIPTION	APPROVAL	DATE

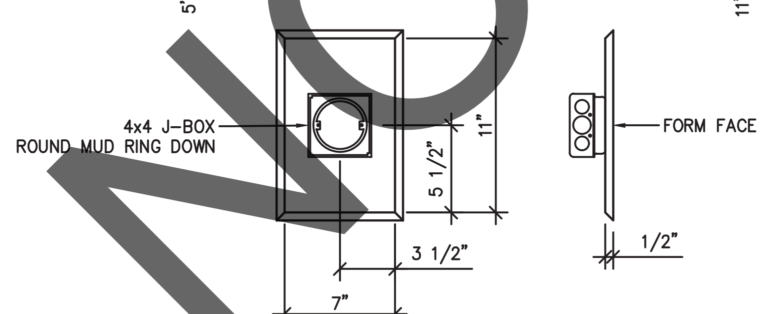
SCALE	1/2"=1'-0"	DATE	6-9-2023
DRAWN	G.OGG	FILE NO.	CRS-108
CHECKED	MCT	PLOT	24

WALL PANEL
MARK W1

DWG NO.	SHEET	REV.
CRS-07	7 / 29	0







LIGHT DETAIL

NOT FOR BID

NOTES:

1. EXCEPT R311 & R411, REINFORCING BARS TO BE PLACED IN PAIRS ONE EACH FACE OF PANEL W/ 3/4" MIN. COVER
2. ALL OTHER REBAR TO BE CENTERED IN PANEL.
3. DOOR FRAMES TO BE INSTALLED DURING FINAL ASSEMBLY.

APPROVED: STATE OF CA - CERTIFIED DAA

Based on the requirements of title 25 California code of regulations
Chapter 3 subchapter 2 Commercial Modular

Date: 07-20-2023 Expires: 10-31-2024

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PFS CORPORATION - Cottage Grove, WI

EMBEDDED MATERIALS

ITEM	QTY
AS-2	4
PS-2	10
PS-19	2
R411	2
FL-648	2
R311	1
R320	4
R3x83	8
R3x94	6
R3x192	2
R3x92	2
ROUND MUD RING	1
4x4 J-BOX	1
B.O. 40 1/8" x 82 1/4"	2
SI-2 MOLD	2
B.O. PARTIAL 3"x6"x2" DP	1

CU. FT. CONC.	SQ. FT. W.W.F.
28.9 (1.07)	87

APPROXIMATE WEIGHT
4,335

REGISTERED PROFESSIONAL ENGINEER
WILLIAM RICHARD HEIDEN, III
74138
CIVIL
STATE OF CALIFORNIA

July 15, 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

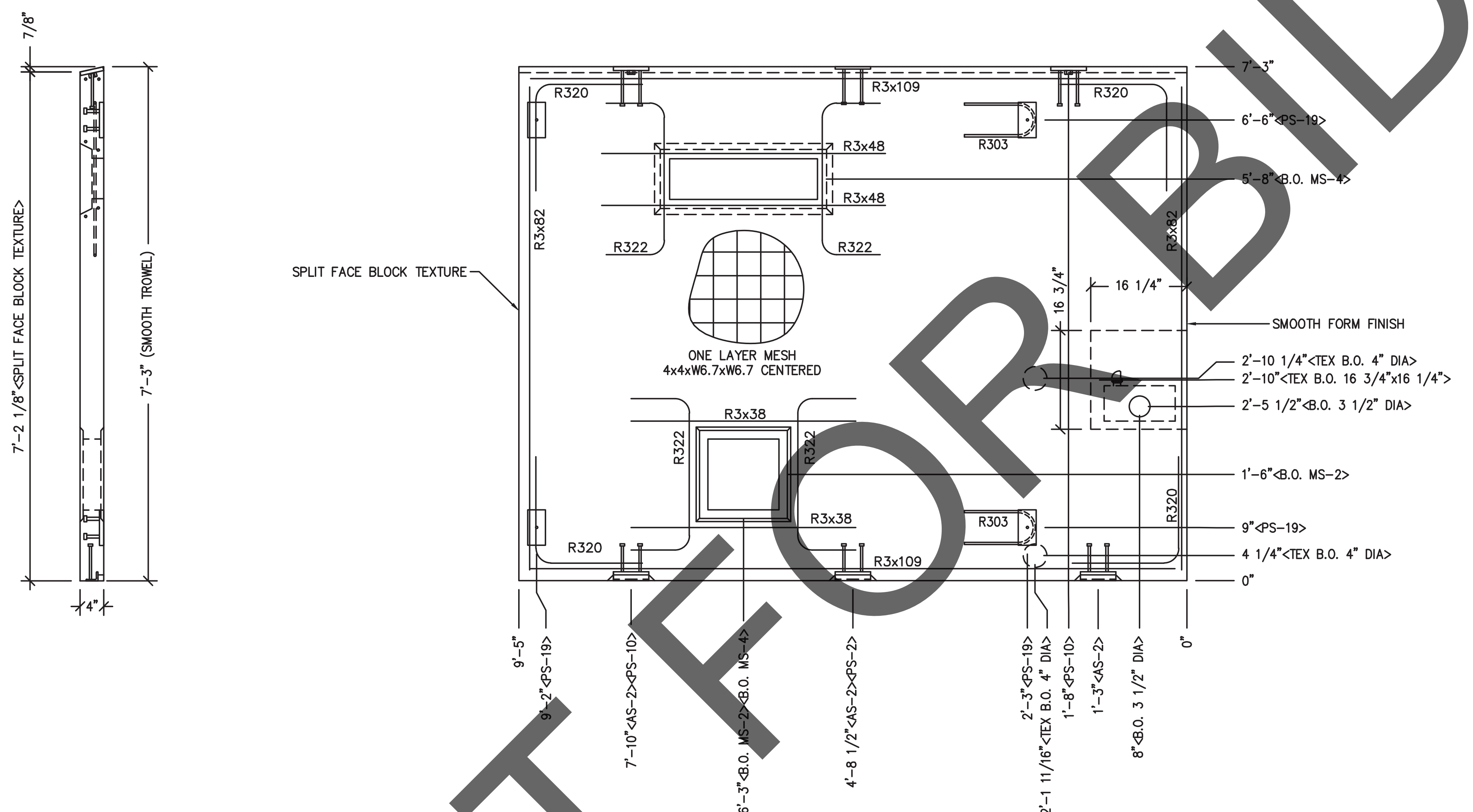
PROJECT TITLE
CORTEZ SECTIONAL
BUILDING NUMBER CRS-108

REV.	DESCRIPTION	APPROVAL	DATE

SCALE	1/2"=1'-0"	DATE	6-9-2023
DRAWN	G.OGG	FILE NO.	CRS-108
CHECKED	MCT	PLOT	24

WALL PANEL
MARK W2

DWG NO.	SHEET	REV.
CRS-08	8 / 29	0



NOTES:

1. EXCEPT R303, R322, R3x48 & R3x38 REINFORCING BARS TO BE PLACED IN PAIRS ONE EACH FACE OF PANEL W/ 3/4" MIN. COVER
2. ALL OTHER REBAR TO BE CENTERED IN PANEL.

APPROVED: STATE OF CA - CERTIFIED DAA

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PFS

PFS CORPORATION - Cottage Grove, WI

EMBEDDED MATERIALS

ITEM	QTY
AS-2	3
PS-2	1
PS-10	2
PS-19	4
R303	2
R320	8
R3x82	4
R3x109	4
R3x48	2
R3x38	2
R322	4
B.O. MS-2	1
B.O. MS-4	1
TEX B.O. 16 3/4"x16 1/4"	1
B.O. 3 1/2" DIA	1
TEX B.O. 4" DIA	2

CU. FT. CONC.	SQ. FT. W.W.F.
21.9 (0.81)	66

APPROXIMATE WEIGHT
3,288

REGISTERED PROFESSIONAL ENGINEER
WILLIAM RICHARD HEIDEN, III
74138
CIVIL
STATE OF CALIFORNIA

July 15, 2023

LBFoster®
CXT® Products

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

PROJECT TITLE
CORTEZ SECTIONAL
BUILDING NUMBER CRS-108

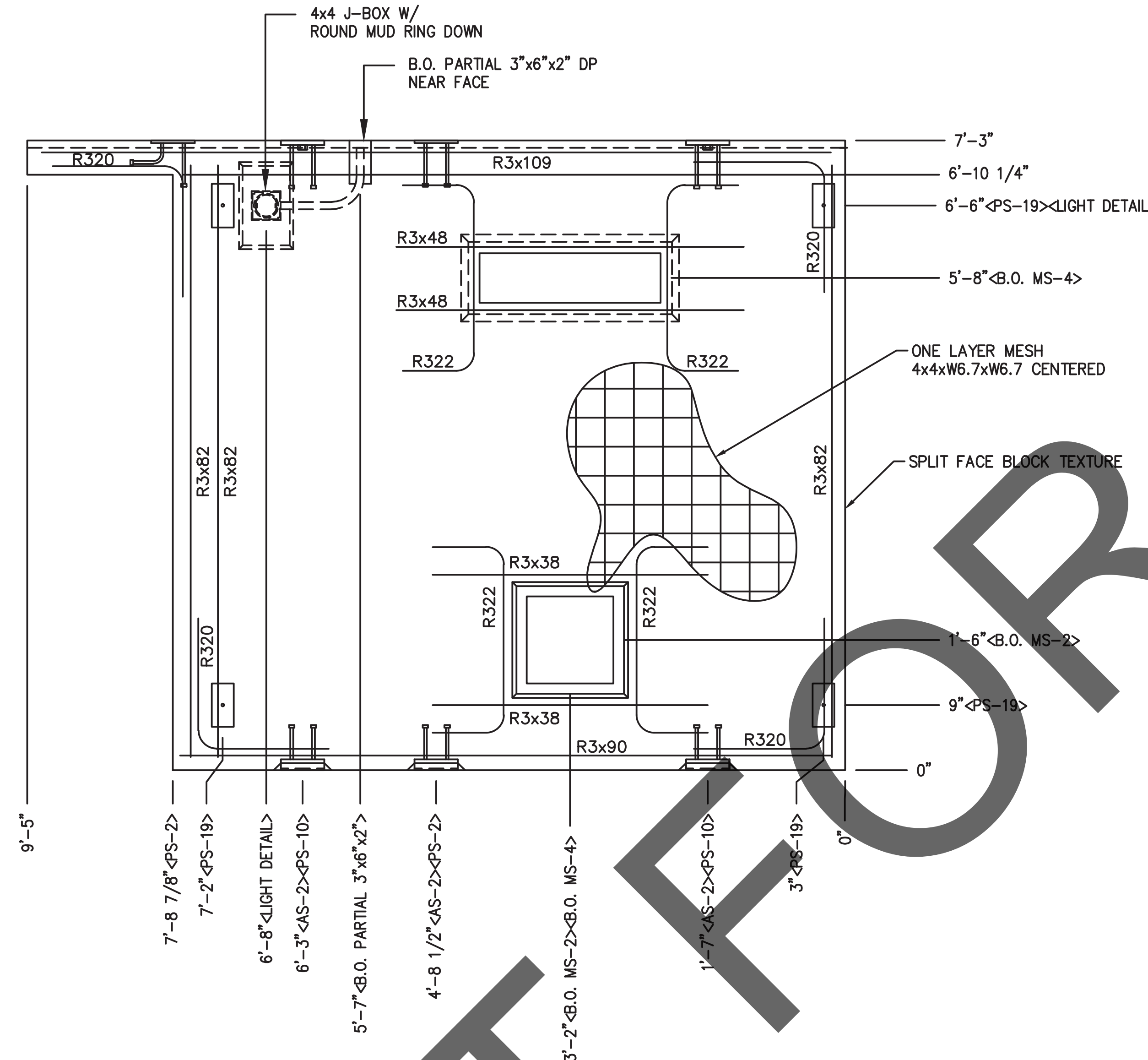
NOTICE

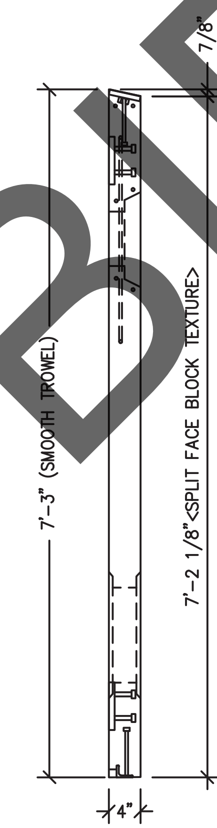
REV.	DESCRIPTION	APPROVAL	DATE

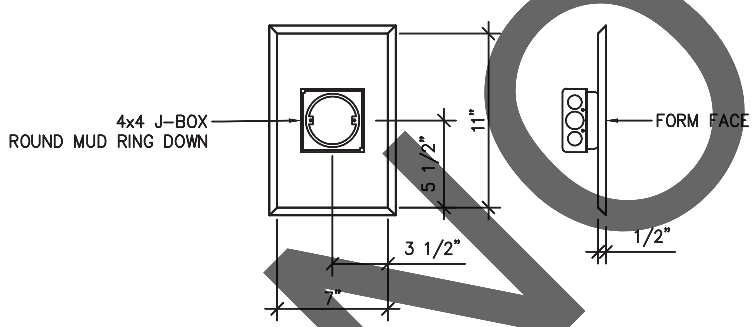
SCALE	1/2"=1'-0"	DATE	6-9-2023
DRAWN	G.OGG	FILE NO.	CRS-108
CHECKED	MCT	PLOT	24

WALL PANEL
MARK W3

DWG NO.	SHEET	REV.
CRS-09	9 / 29	0







LIGHT DETAIL

NOT FOR BID

NOTES:

1. EXCEPT R322, R3x48 & R3x38 REINFORCING BARS TO BE PLACED IN PAIRS ONE EACH FACE OF PANEL W/ 3/4" MIN. COVER
2. ALL OTHER REBAR TO BE CENTERED IN PANEL.

APPROVED: STATE OF CA - CERTIFIED DAA

Based on the requirements of title 25 California code of regulations
Chapter 3 subchapter 2 Commercial Modular

Date: 07-20-2023 Expires: 10-31-2024

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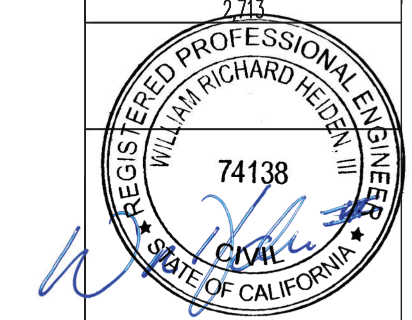
PFS CORPORATION - Cottage Grove, WI

EMBEDDED MATERIALS

ITEM	QTY
AS-2	3
PS-2	2
PS-10	2
PS-19	4
R3x109	2
R320	8
R3x82	6
R3x48	2
R3x38	2
R322	4
R3x90	2
B.O. PARTIAL 3"x6"x2" DP	1
4x4 J-BOX	1
ROUND MUD RING	1
B.O. MS-2	1
B.O. MS-4	1

CU. FT. CONC.	SQ. FT. W.W.F.
18.1 (0.67)	55

APPROXIMATE WEIGHT
2,713



July 15, 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
CORTEZ SECTIONAL
BUILDING NUMBER CRS-108

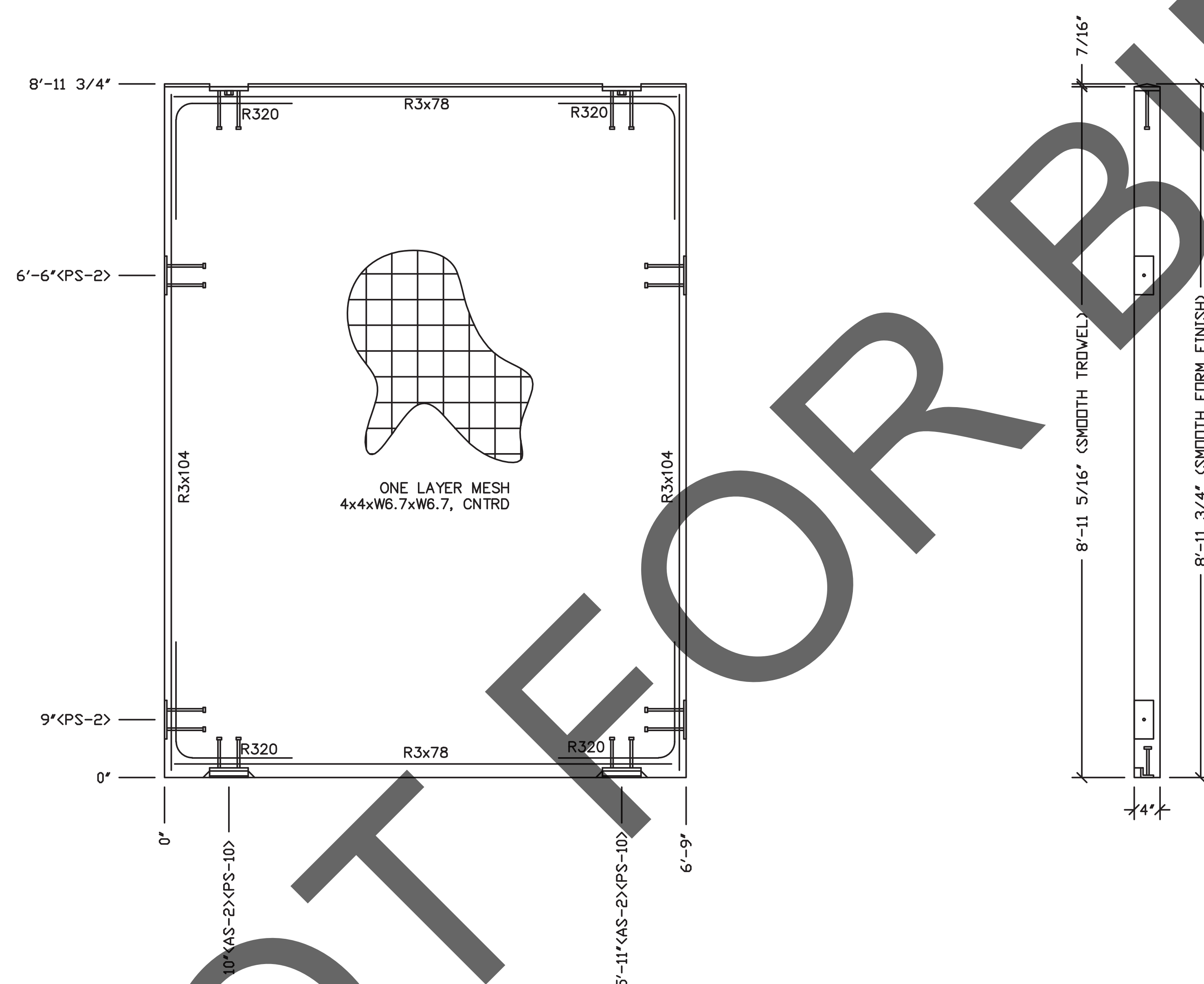
NOTICE

REV.	DESCRIPTION	APPROVAL	DATE

SCALE	1/2"=1'-0"	DATE	6-9-2023
DRAWN	G.OGG	FILE NO.	CRS-108
CHECKED	MCT	PLOT	24

WALL PANEL
MARK W4

DWG NO.	SHEET	REV.
CRS-10	10/29	0



EMBEDDED MATERIALS	
ITEM	QTY
AS-2	2
PS-2	4
PS-10	2
R320	8
R3x104	4
R3x78	4

CU. FT. CONC.	SQ. FT. W.W.F.
20.2 (0.75)	61

APPROXIMATE WEIGHT
3,025

REGISTERED PROFESSIONAL ENGINEER
WILLIAM RICHARD HEIDEN, III
74138
CIVIL
STATE OF CALIFORNIA

July 15, 2023

LBFoster
CXT® Products

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362 Waverly Road Williamstown, WV 26187

PROJECT TITLE
CORTEZ SECTIONAL
BUILDING NUMBER CRS-108

NOTICE

REV.	DESCRIPTION	APPROVAL	DATE

SCALE	1/2"=1'-0"	DATE	6-9-2023
DRAWN	G.OGG	FILE NO.	CRS-108
CHECKED	MCT	PLOT	24

WALL PANEL
MARK W5

DWG NO.	SHEET	REV.
CRS-11	11 / 29	0

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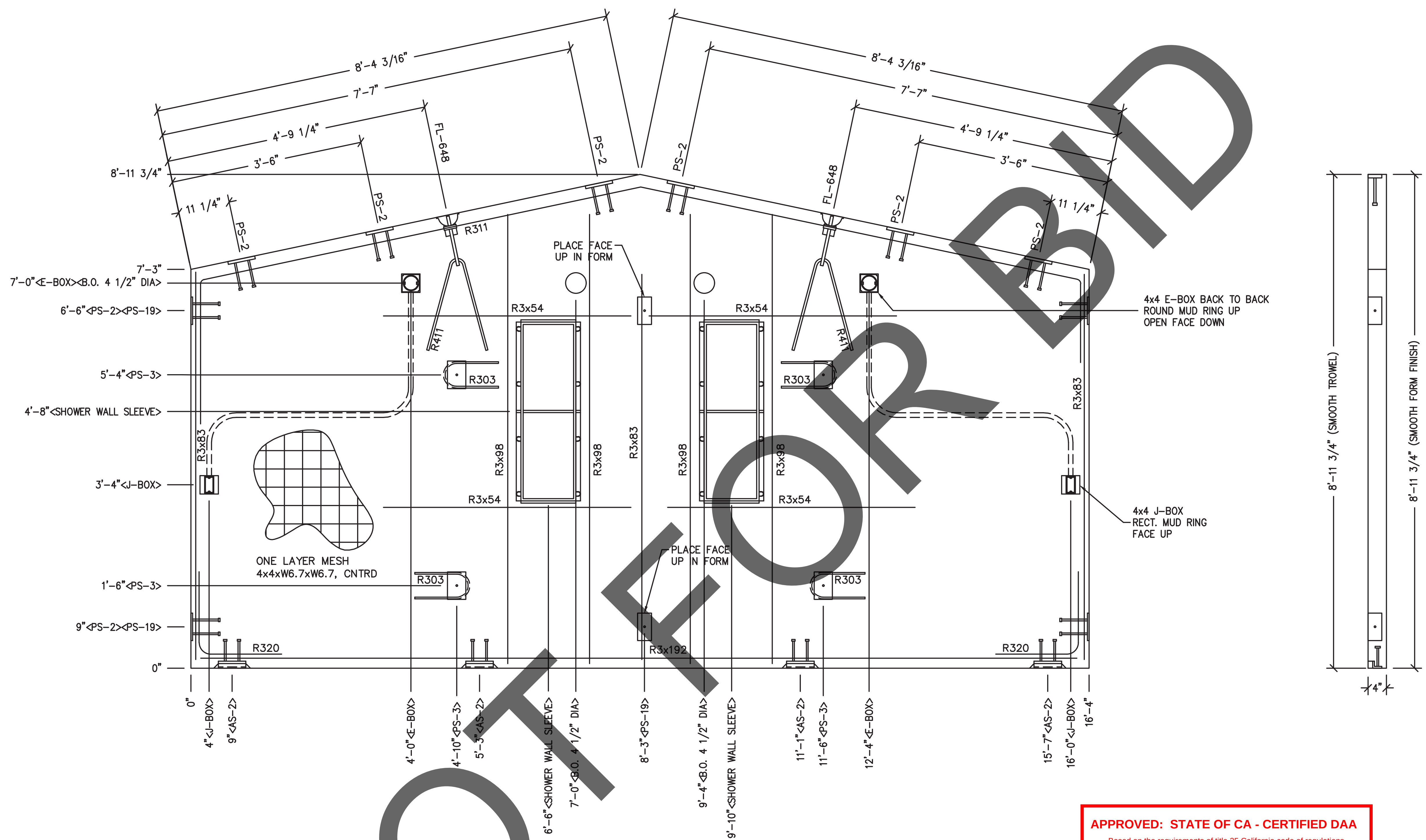
PFS CORPORATION - Cottage Grove, WI

NOTES:

1. REINFORCING BARS TO BE PLACED IN PAIRS ONE EACH FACE OF PANEL W/ 3/4" MIN. COVER

MARINE PACKAGE



EMBEDDED MATERIALS

ITEM	QTY
AS-2 SS	4
PS-2 SS	10
PS-19 SS	2
R411	2
R311	1
R320	4
R3x83	6
R3x192	2
FL-648	2
B.O. 4 1/2" DIA	2
R303	4
PS-3 SS	4
SHOWER WALL SLEEVE	2
4x4 E- BOX	4
ROUND MUD RING	2
RECT MUD RING	2
R3x98	8
4x4 J-BOX	2
R3x54	8

MARINE PACKAGE

CU. FT. CONC.	SQ. FT. W.W.F.
41.6 (1.35)	133

APPROXIMATE WEIGHT
6,240

REGISTERED PROFESSIONAL ENGINEER
WILLIAM RICHARD HEIDEN, III
74138
CIVIL
STATE OF CALIFORNIA

July 15, 2023

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PFS CORPORATION - Cottage Grove, WI

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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
CORTEZ SECTIONAL
BUILDING NUMBER CRS-108

NOTICE

REV.	DESCRIPTION	APPROVAL	DATE

SCALE	1/2"=1'-0"	DATE	6-9-2023
DRAWN	G.OGG	FILE NO.	CRS-108
CHECKED	MCT	PLOT	24

WALL PANEL
MARK W6

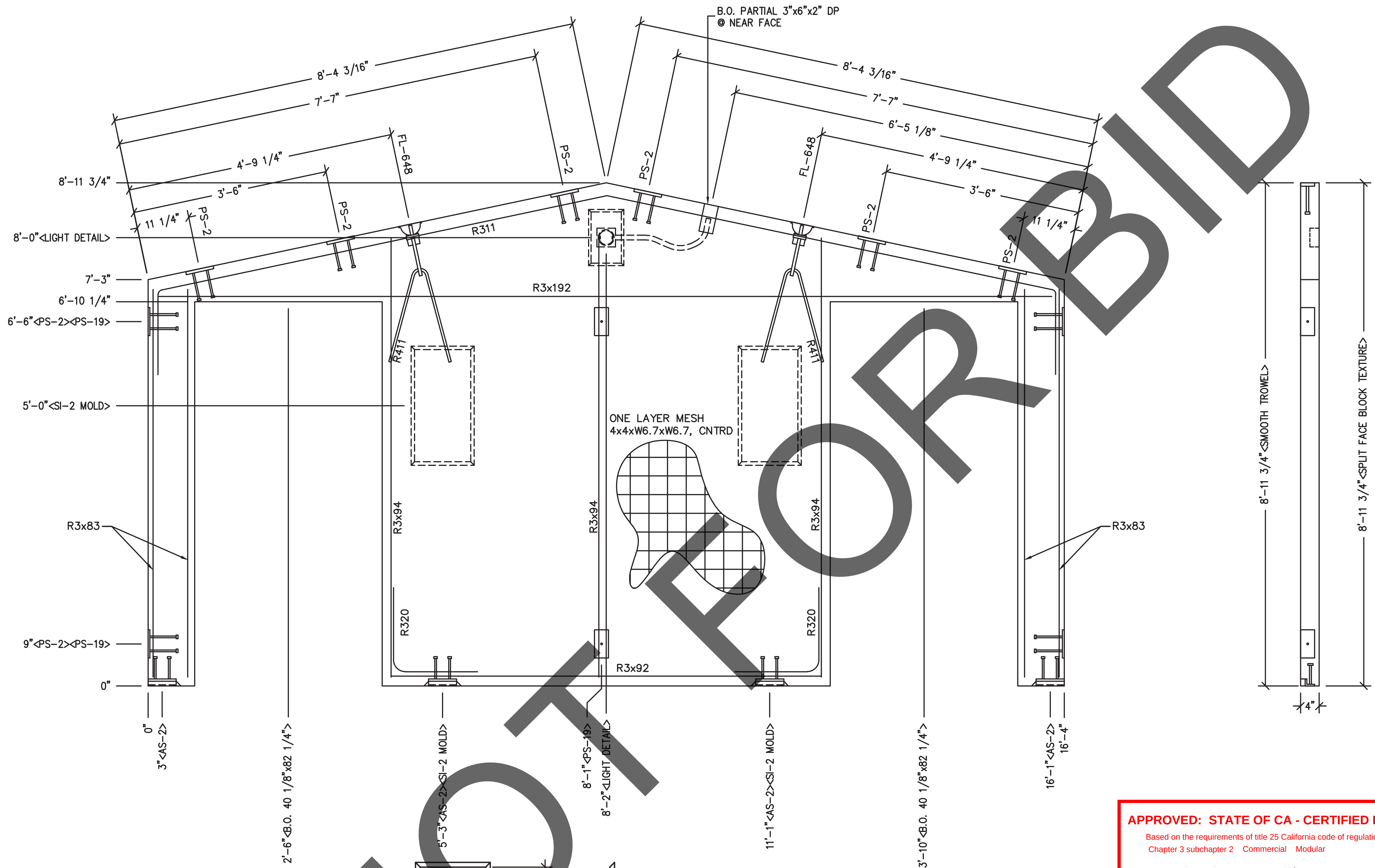
DWG NO.	SHEET	REV.
CRS-12	12 / 29	0

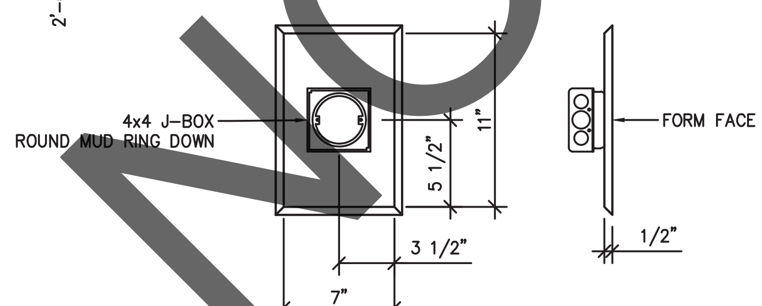
NOTES:

1. EXCEPT R311 & R411, REINFORCING BARS TO BE PLACED IN PAIRS ONE EACH FACE OF PANEL W/ 3/4" MIN. COVER. ALL OTHER BARS TO BE CENTERED IN PANEL.

MARINE PACKAGE

EMBEDDED MATERIALS	
ITEM	QTY
AS-2 SS	4
PS-2 SS	10
PS-19 SS	2
R411	2
FL-648	2
R311	1
R320	4
R3x83	8
R3x94	6
R3x192	2
R3x92	2
ROUND MUD RING	1
4x4 J-BOX	1
B.O. 40 1/8" x 82 1/4"	2
SI-2 MOLD	2
B.O. PARTIAL 3"x6"x2" DP	1





LIGHT DETAIL

APPROVED: STATE OF CA - CERTIFIED DAA

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Chapter 3 subchapter 2 Commercial Modular

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PFS

PFS CORPORATION - Cottage Grove, WI

NOTES:

1. EXCEPT R311 & R411, REINFORCING BARS TO BE PLACED IN PAIRS ONE EACH FACE OF PANEL W/ 3/4" MIN. COVER
2. ALL OTHER REBAR TO BE CENTERED IN PANEL.
3. DOOR FRAMES TO BE INSTALLED DURING FINAL ASSEMBLY.

MARINE PACKAGE

CU. FT. CONC.	SQ. FT. W.W.F.
28.9 (1.07)	87

APPROXIMATE WEIGHT
4,335

REGISTERED PROFESSIONAL ENGINEER
WILLIAM RICHARD HEIDEN, III
74138
CIVIL
STATE OF CALIFORNIA

July 15, 2023

LBFoster
CXT® Products

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

PROJECT TITLE
CORTEZ SECTIONAL
BUILDING NUMBER CRS-108

NOTICE

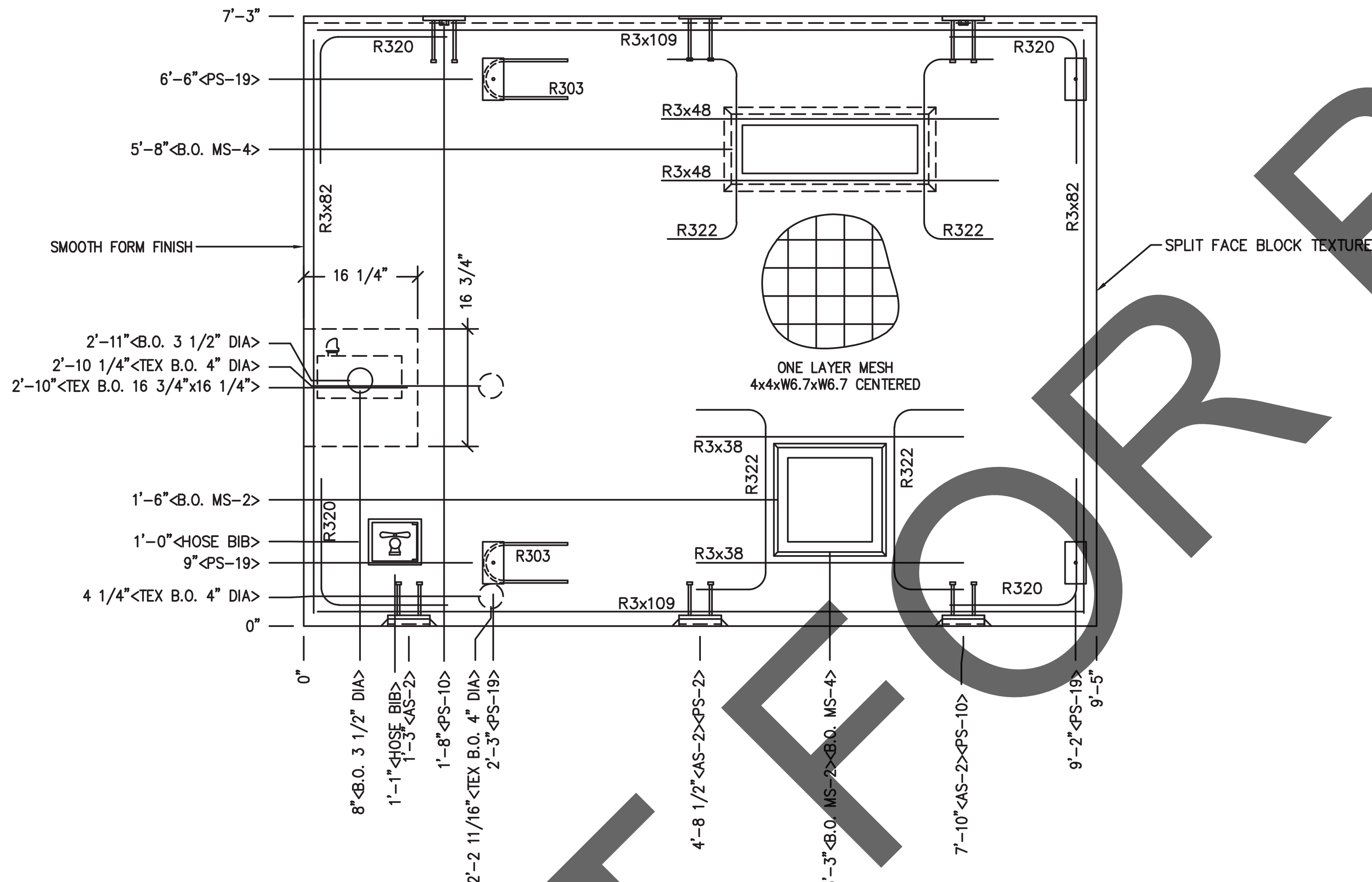
REV.	DESCRIPTION	APPROVAL	DATE

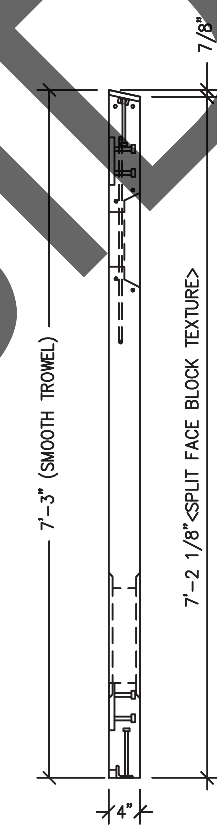
SCALE	1/2"=1'-0"	DATE	6-9-2023
DRAWN	G.OGG	FILE NO.	CRS-108
CHECKED	MCT	PLOT	24

WALL PANEL
MARK W7

DWG NO.	SHEET	REV.
CRS-13	13 / 29	0

MARINE PACKAGE





EMBEDDED MATERIALS	
ITEM	QTY
AS-2 SS	3
PS-2 SS	1
PS-10 SS	2
PS-19 SS	4
R303	2
R320	8
R3x82	4
R3x109	4
R3x48	2
R3x38	2
R322	4
B.O. MS-4	1
B.O. MS-2	1
TEX. B.O. 16 3/4"x16 1/4"	1
B.O. 3 1/2" DIA	1
TEX B.O. 4" DIA	2
HOSE BIB	1

MARINE PACKAGE

CU. FT. CONC.	SQ. FT. W.W.F.
21.9 (0.81)	66

APPROXIMATE WEIGHT
3,288

July 15, 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
CORTEZ SECTIONAL
BUILDING NUMBER CRS-108

NOTICE

REV.	DESCRIPTION	APPROVAL	DATE

SCALE	1/2"=1'-0"	DATE	6-9-2023
DRAWN	G.OGG	FILE NO.	CRS-108
CHECKED	MCT	PLOT	24

WALL PANEL
MARK W8

DWG NO.	SHEET	REV.
CRS-14	14 / 29	0

APPROVED: STATE OF CA - CERTIFIED DAA

Based on the requirements of title 25 California code of regulations
Chapter 3 subchapter 2 Commercial Modular

Date: 07-20-2023 Expires: 10-31-2024

Approval # PFS: 23-006080

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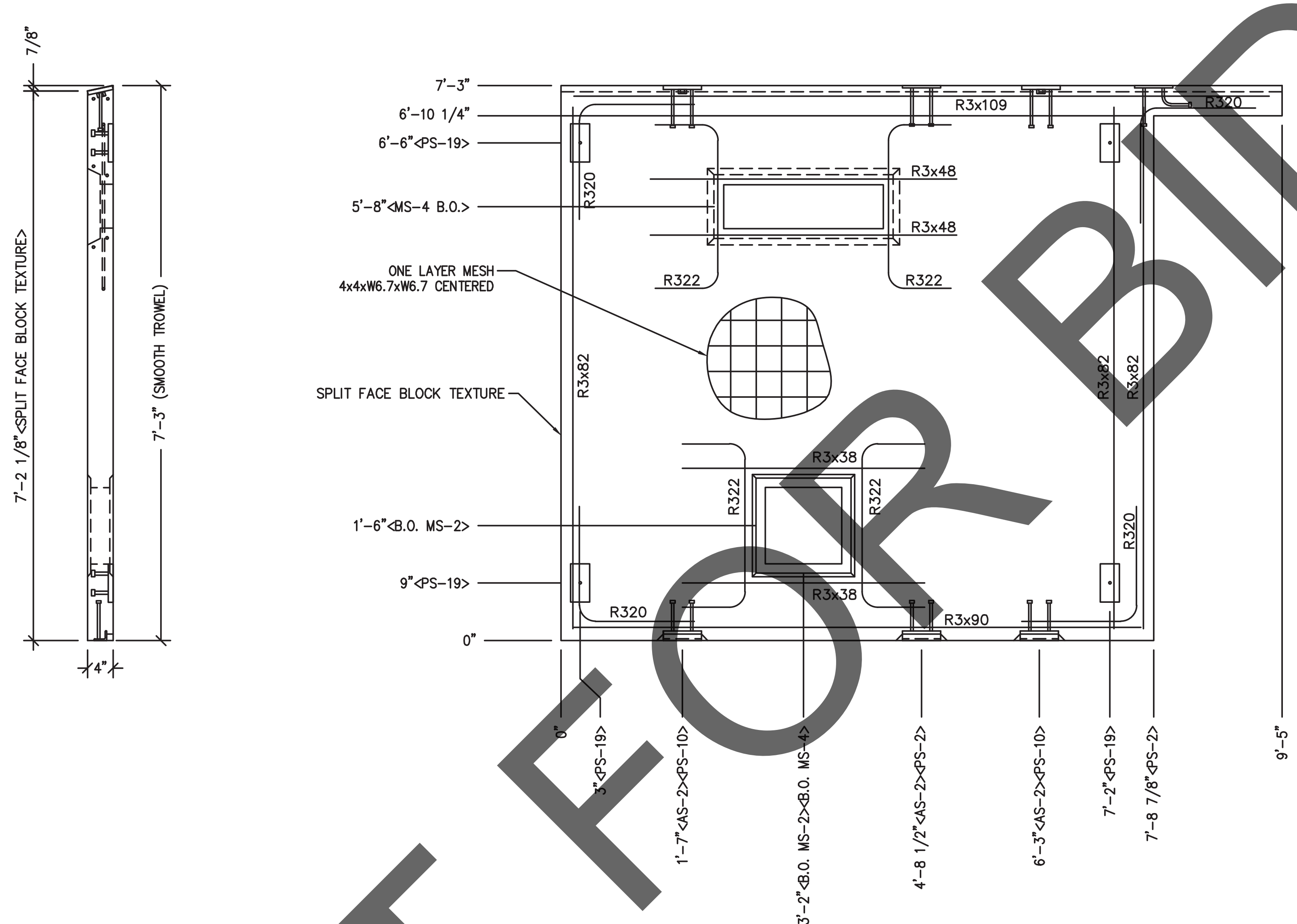
PFS CORPORATION - Cottage Grove, WI

NOTES:

2. EXCEPT R303, R322, R3x48 & R3x38 REINFORCING BARS TO BE PLACED IN PAIRS ONE EACH FACE OF PANEL W/ 3/4" MIN. COVER
3. ALL OTHER REBAR TO BE CENTERED IN PANEL.



NOTES:

1. EXCEPT R322, R3x48 & R3x38 REINFORCING BARS TO BE PLACED IN PAIRS ONE EACH FACE OF PANEL W/ 3/4" MIN. COVER
2. ALL OTHER REBAR TO BE CENTERED IN PANEL.

APPROVED: STATE OF CA - CERTIFIED DAA

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Chapter 3 subchapter 2 Commercial Modular

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PFS

PFS CORPORATION - Cottage Grove, WI

EMBEDDED MATERIALS

ITEM	QTY
AS-2 SS	3
PS-2 SS	2
PS-10 SS	2
PS-19 SS	4
R3x109	2
R320	8
R3x82	6
R3x48	2
R3x38	2
R322	4
R3x90	2
B.O. MS-2	1
B.O. MS-4	1

MARINE PACKAGE

CU. FT. CONC.	SQ. FT. W.W.F.
19.8 (0.74)	55

APPROXIMATE WEIGHT
2,970

REGISTERED PROFESSIONAL ENGINEER
WILLIAM RICHARD HEIDEN, III
74138
CIVIL
STATE OF CALIFORNIA

July 15, 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
CORTEZ SECTIONAL
BUILDING NUMBER CRS-108

NOTICE

REV.	DESCRIPTION	APPROVAL	DATE

SCALE	1/2"=1'-0"	DATE	6-9-2023
DRAWN	G.OGG	FILE NO.	CRS-108
CHECKED	MCT	PLOT	24

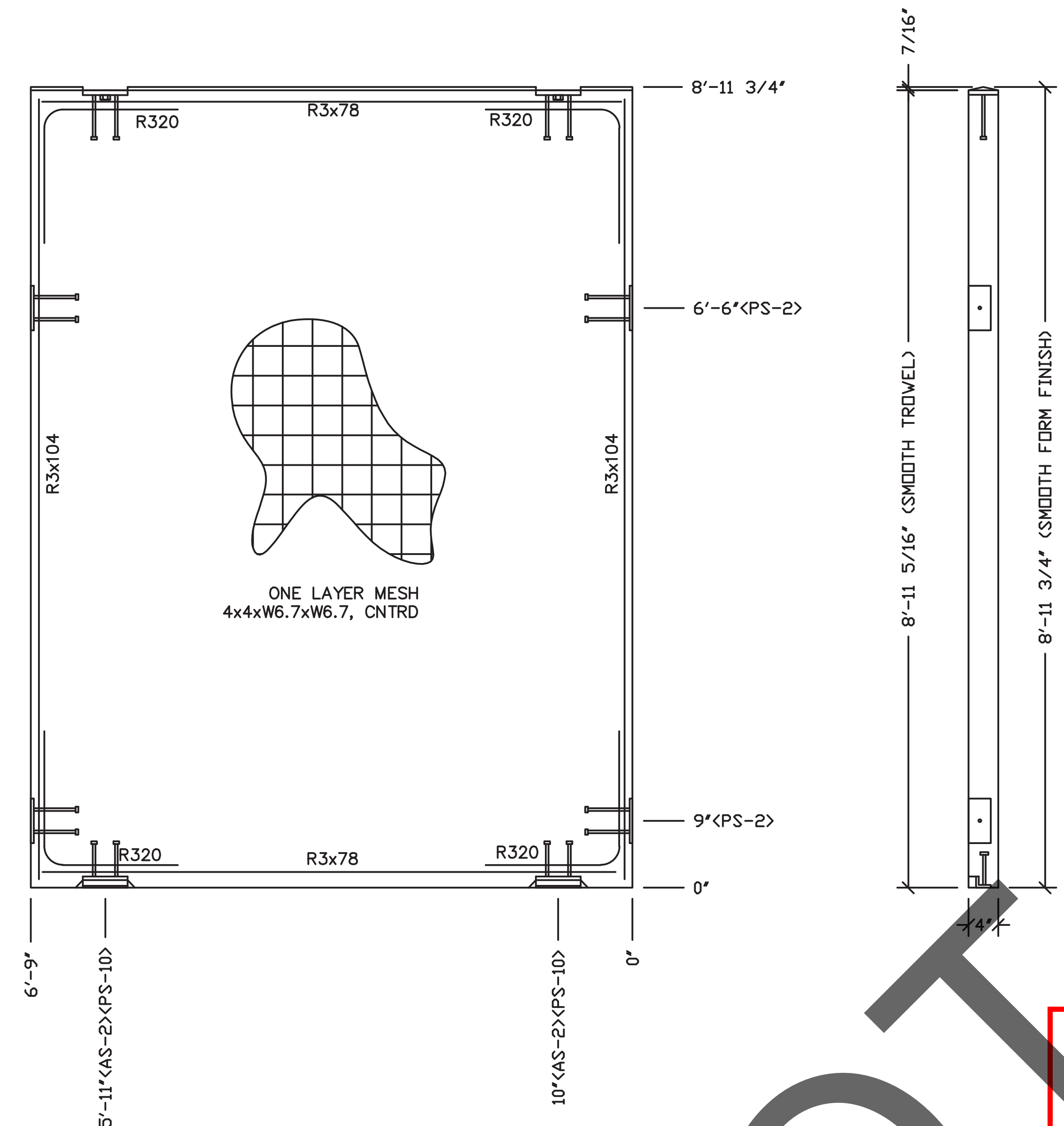
WALL PANEL
MARK W9

DWG NO.	SHEET	REV.
CRS-15	15/29	0

MARINE PACKAGE

EMBEDDED MATERIALS	
ITEM	QTY
AS-2 SS	2
PS-2 SS	4
PS-10 SS	2
R320	8
R3x104	4
R3x78	4

MARINE PACKAGE	
CU. FT. CONC.	SQ. FT. W.W.F.
20.2 (0.75)	61
APPROXIMATE WEIGHT 3,025	



APPROVED: STATE OF CA - CERTIFIED DAA

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PFS

PFS CORPORATION - Cottage Grove, WI

MARK WALL 10

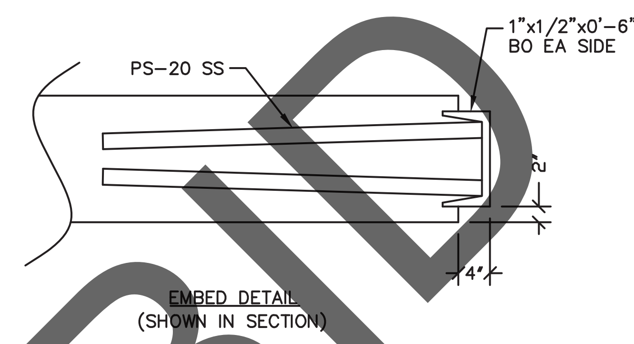
NOTES:

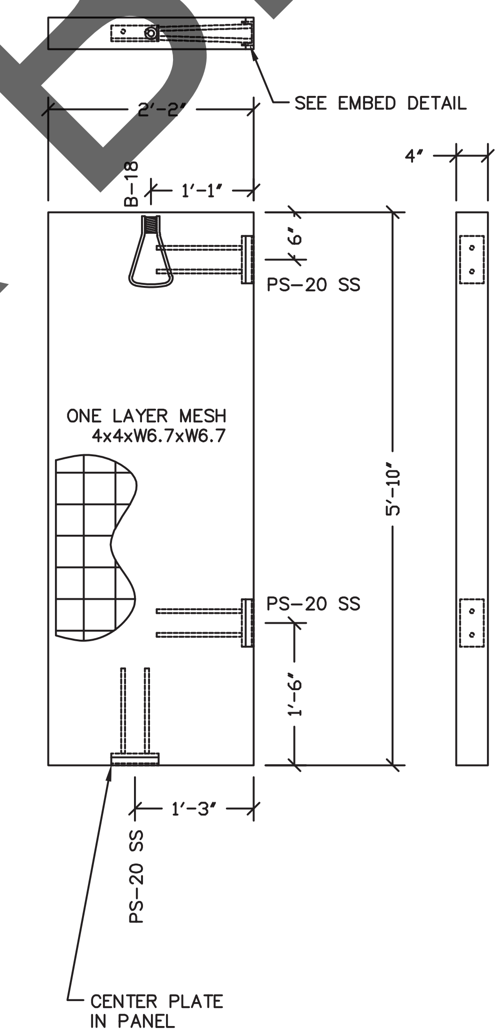
1. REINFORCING BARS TO BE PLACED IN PAIRS ONE EACH FACE OF PANEL W/ 3/4" MIN. COVER

MARINE PACKAGE

EMBEDDED MATERIALS	
ITEM	QTY
PS-20 SS	3
B-18	1

MARINE PACKAGE	
CU. FT. CONC.	SQ. FT. W.W.F.
4.2 (0.16)	12
APPROXIMATE WEIGHT 630	





MARK P1 – 2 REQUIRED

NOTES:

1. RECESS B-18 INSERTS 1/2", GROUT CLOSED AT FINAL ASSEMBLY.
2. REINFORCING BARS TO BE PLACED IN PAIRS ONE EACH FACE OF PANEL W/ 3/4" MIN. COVER
3. CUP STONE ALL EDGES.

REGISTERED PROFESSIONAL ENGINEER
WILLIAM RICHARD HEIDEN, III
74138
CIVIL
STATE OF CALIFORNIA

July 15, 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
CORTEZ SECTIONAL
BUILDING NUMBER CRS-108

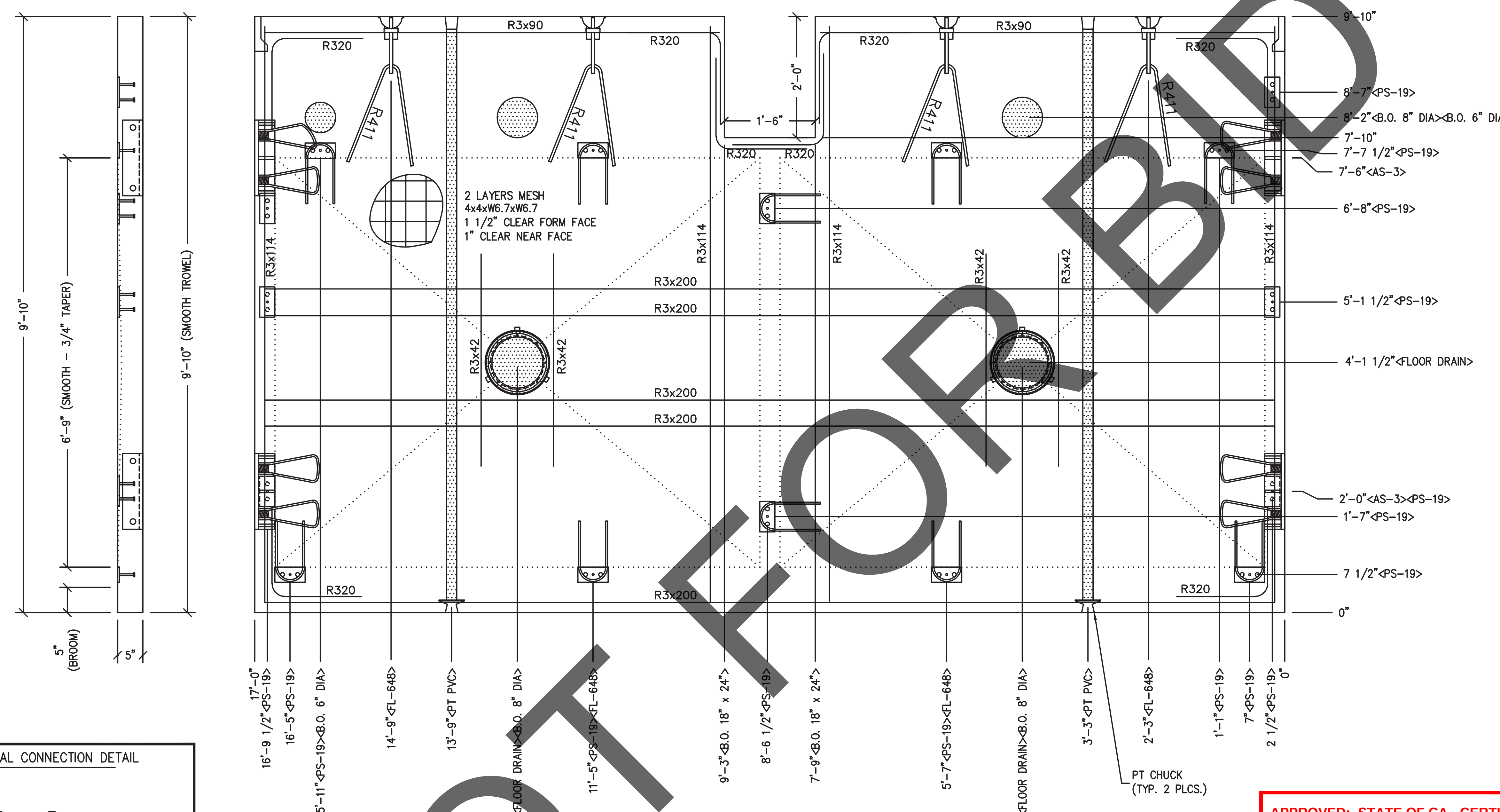
NOTICE

REV.	DESCRIPTION	APPROVAL	DATE

SCALE	1/2"=1'-0"	DATE	6-9-2023
DRAWN	G.OGG	FILE NO.	CRS-108
CHECKED	MCT	PLOT	24

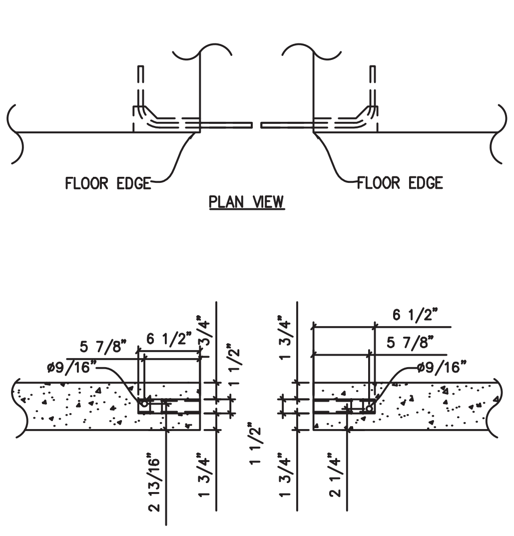
WALL PANEL MARK W10
& PARTITION MARK P1

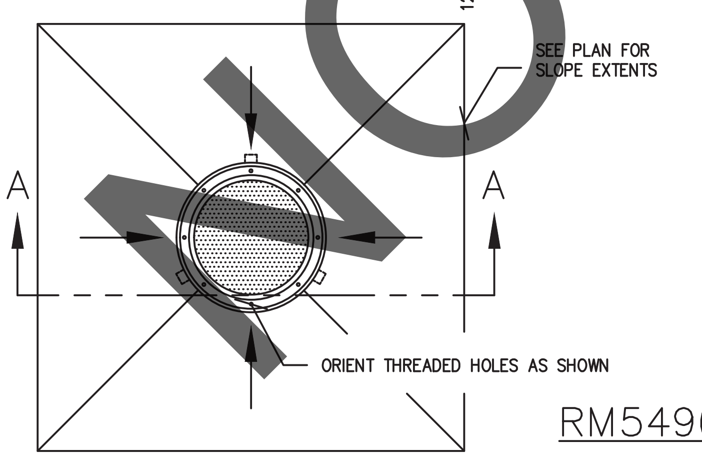
DWG NO.	SHEET	REV.
CRS-16	16 / 29	0

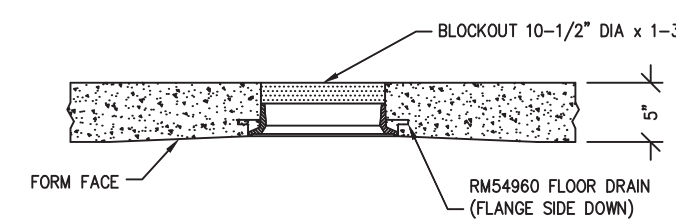


NOT FOR BID

SECTIONAL CONNECTION DETAIL







SECTION A-A

RM54960 FLOOR DRAIN BLOCKOUT DETAIL

NOTES:

FLOOR TO BE CAST UPSIDE DOWN

1. PAN DEPTH = 3/4"
2. EXCEPT R303, R411, & R390 REINFORCING BARS TO BE PLACED IN PAIRS ONE EACH FACE OF PANEL W/ 1" MIN. COVER

APPROVED: STATE OF CA - CERTIFIED DAA

Based on the requirements of title 25 California code of regulations
Chapter 3 subchapter 2 Commercial Modular

Date: 07-20-2023 Expires: 10-31-2024

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PFS

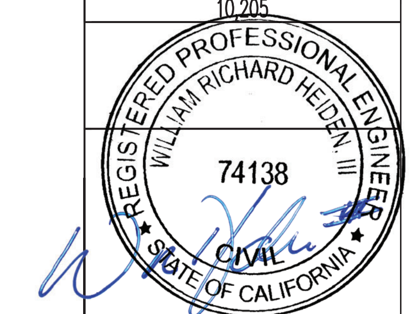
PFS CORPORATION - Cottage Grove, WI

EMBEDDED MATERIALS

ITEM	QTY
FL-648	4
PS-19	16
R303	10
R320	16
R3x90	2
R3x114	8
R3x200	10
R3x42	8
SECTIONAL B.O.	2
AS-3	4
FLOOR DRAIN	2
B.O. 18"x24"	1
B.O. 8" DIA	2
B.O. 6" DIA	1
1" PVC SCHED40 x 9'-5"	2
PT CHUCK	2
R411	4

CU. FT. CONC.	SQ. FT. W.W.F.
68.0 (2.52)	327

APPROXIMATE WEIGHT
10,205



July 15, 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
CORTEZ SECTIONAL
BUILDING NUMBER CRS-108

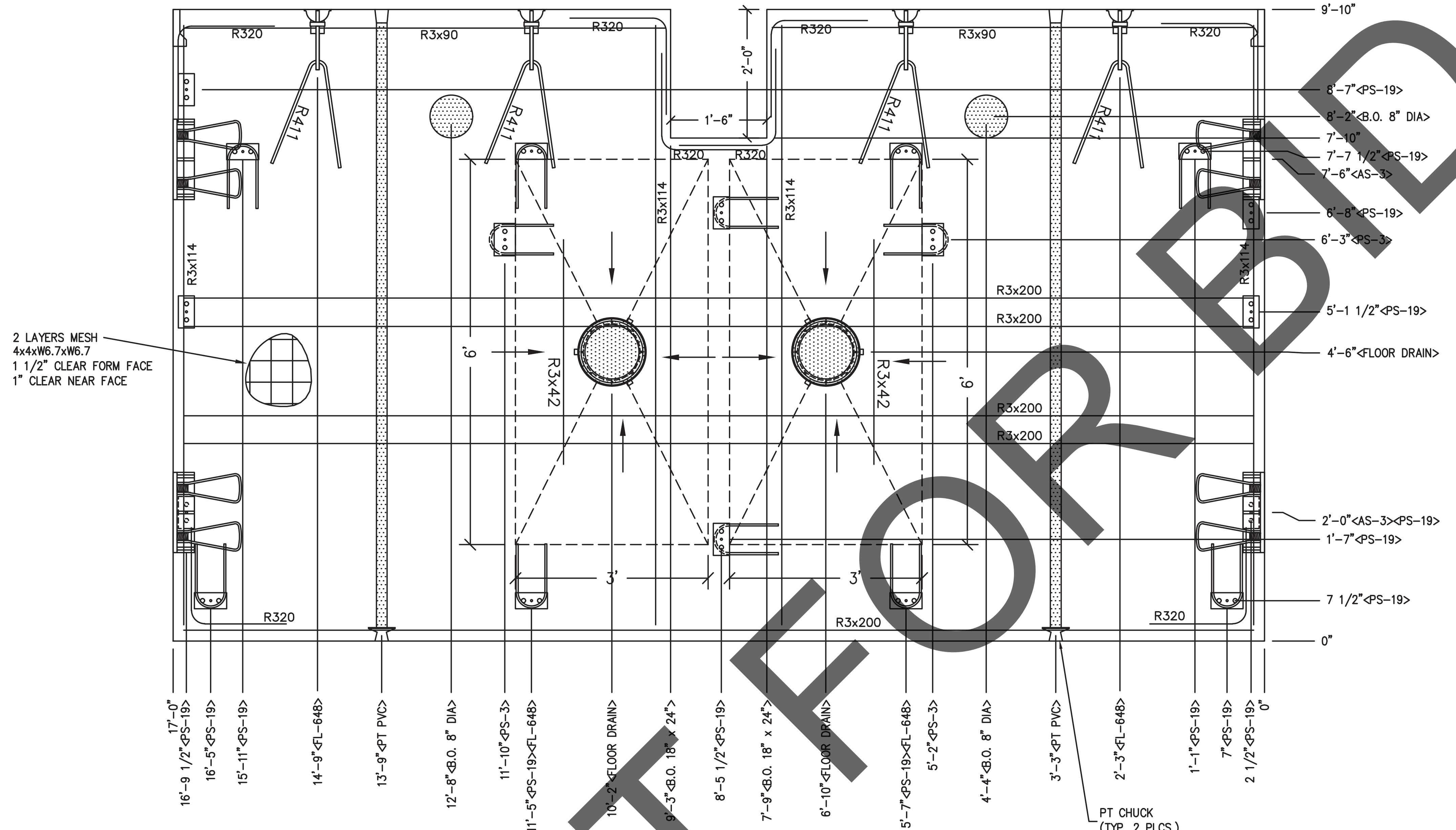
REV.	DESCRIPTION	APPROVAL	DATE

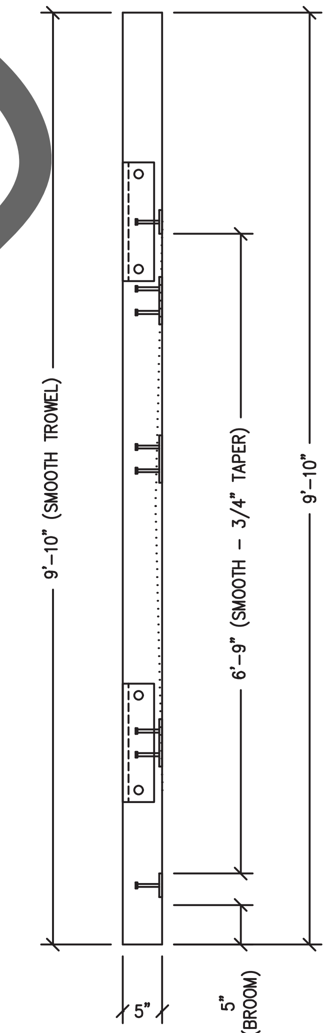
SCALE	1/2"=1'-0"	DATE	6-9-2023
DRAWN	G.OGG	FILE NO.	CRS-108
CHECKED	MCT	PLOT	24

FLOOR SLAB
MARK F1

DWG NO.	SHEET	REV.
CRS-17	17 / 29	0

MARINE PACKAGE





EMBEDDED MATERIALS	
ITEM	QTY
FL-648	4
PS-19 SS	16
R303	10
R320	16
R3x90	2
R3x114	8
R3x200	10
R3x42	4
SECTIONAL B.O.	2
AS-3	4
FLOOR DRAIN	2
B.O. 18"x24"	1
B.O. 8" DIA	2
PT CHUCK	2
1" PVC SCHED40 x 9'-5"	2
R411	4
PS-3 SS	2

MARINE PACKAGE

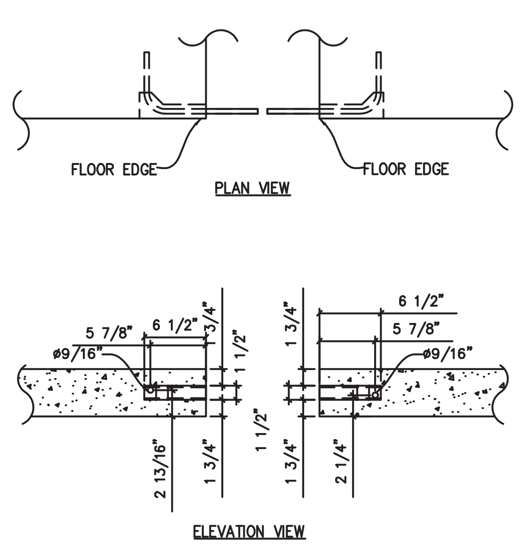
CU. FT. CONC.	SQ. FT. W.W.F.
68.1 (2.52)	327

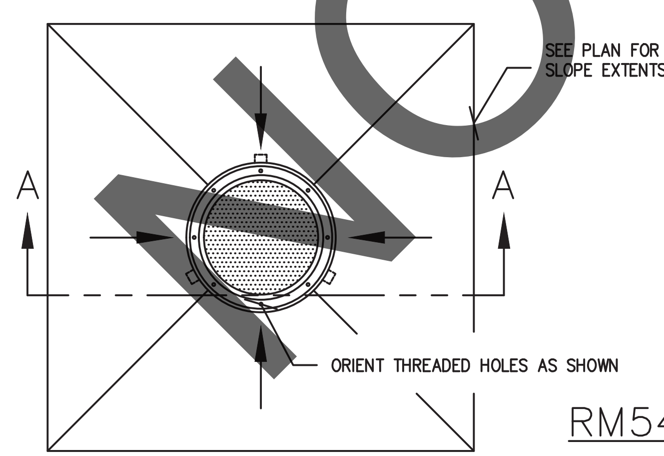
APPROXIMATE WEIGHT
10,217

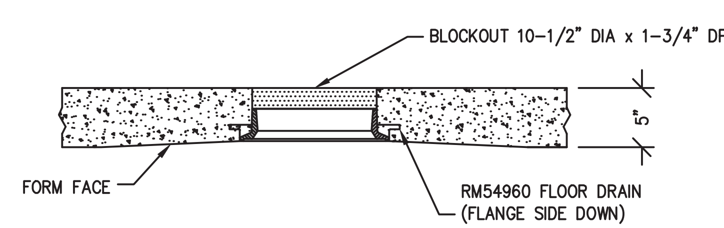
REGISTERED PROFESSIONAL ENGINEER
WILLIAM RICHARD HEIDEN, III
74138
CIVIL
STATE OF CALIFORNIA

July 15, 2023

SECTIONAL CONNECTION DETAIL







SECTION A-A

RM54960 FLOOR DRAIN BLOCKOUT DETAIL

APPROVED: STATE OF CA - CERTIFIED DAA

Based on the requirements of title 25 California code of regulations
Chapter 3 subchapter 2 Commercial Modular

Date: 07-20-2023 Expires: 10-31-2024

Approval # PFS: 23-006080

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PFS CORPORATION - Cottage Grove, WI

NOTES:

FLOOR TO BE CAST UPSIDE DOWN

1. PAN DEPTH = 3/4"
2. EXCEPT R303, R411, & R390 REINFORCING BARS TO BE PLACED IN PAIRS ONE EACH FACE OF PANEL W/ 1" MIN. COVER

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

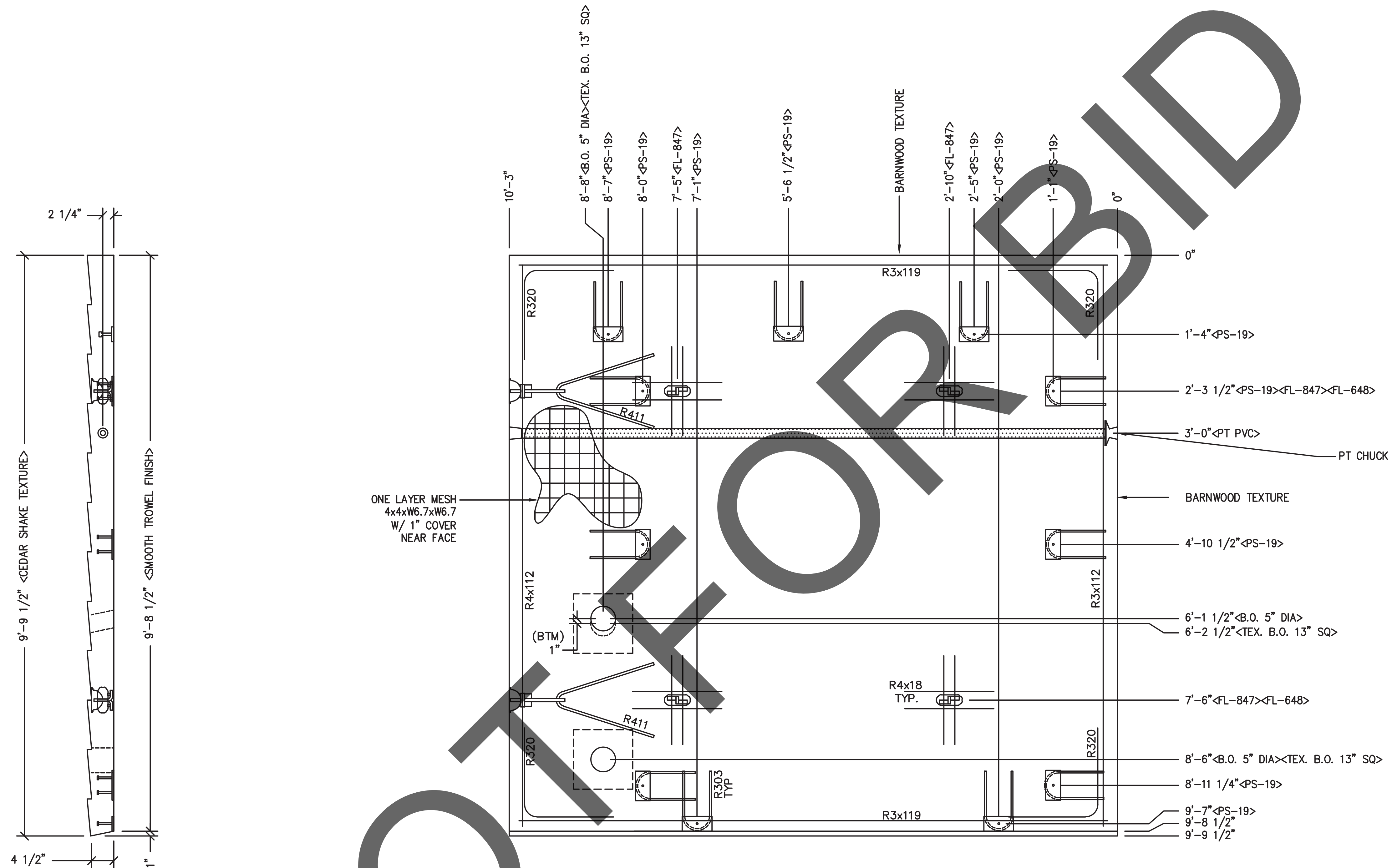
PROJECT TITLE
CORTEZ SECTIONAL
BUILDING NUMBER CRS-108

REV.	DESCRIPTION	APPROVAL	DATE

SCALE	1/2"=1'-0"	DATE	6-9-2023
DRAWN	G.OGG	FILE NO.	CRS-108
CHECKED	MCT	PLOT	24

FLOOR SLAB
MARK F2

DWG NO.	SHEET	REV.
CRS-18	18 / 29	0



EMBEDDED MATERIALS

ITEM	QTY
FL-648	2
FL-847	4
PS-19	11
R303	11
R320	8
R3x112	2
R3x119	4
B.O. 5" DIA	2
R411	2
R4x18	16
R4x112	1
1" PVC SCHED40 x 9'-10"	1
PT CHUCK	1
TEX. B.O. 13" SQ	2

CU. FT. CONC.	SQ. FT. W.W.F.
41.6 (1.54)	100

APPROXIMATE WEIGHT
6,233

REGISTERED PROFESSIONAL ENGINEER
WILLIAM RICHARD HEIDEN, III
74138
CIVIL
STATE OF CALIFORNIA

July 15, 2023

LBFoster
CXT® Products

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

PROJECT TITLE
CORTEZ SECTIONAL
BUILDING NUMBER CRS-108

NOTICE

REV.	DESCRIPTION	APPROVAL	DATE

SCALE	1/2"=1'-0"	DATE	6-9-2023
DRAWN	G.OGG	FILE NO.	CRS-108
CHECKED	MCT	PLOT	24

ROOF SLAB
MARK R1

DWG NO.	SHEET	REV.
CRS-19	19 / 29	0

APPROVED: STATE OF CA - CERTIFIED DAA

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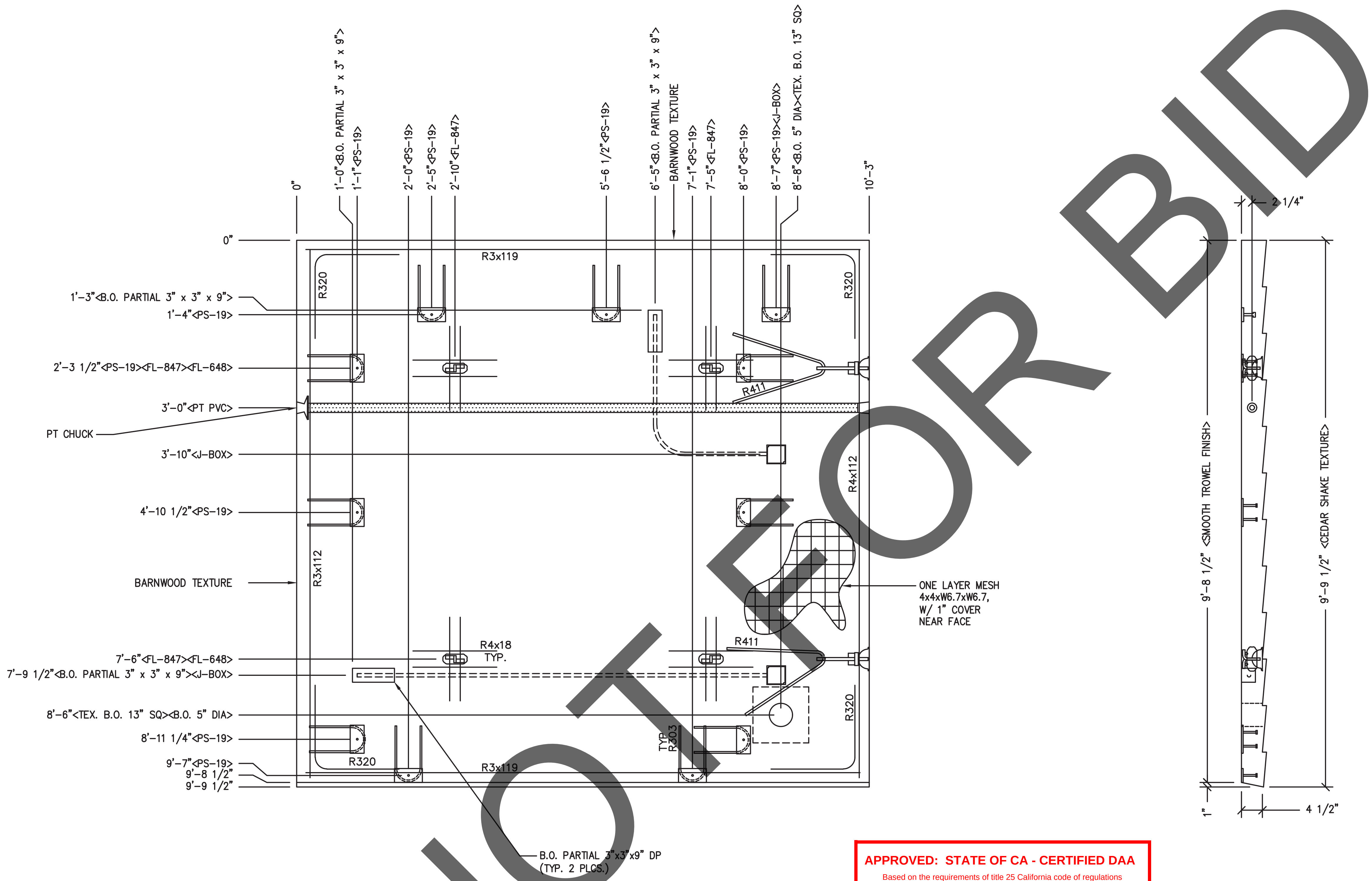
PFS CORPORATION - Cottage Grove, WI

NOTES:

1. EXCEPT R4x112, R303 & R4x18, REINFORCING BARS TO BE PLACED IN PAIRS ONE EACH FACE OF PANEL W/ 1" MIN. COVER
2. R4x18 BARS TO BE PLACED AT NEAR FACE W/ 1" COVER.
3. ALL OTHER BARS TO BE CENTERED IN PANEL.

NOT FOR BID



EMBEDDED MATERIALS	
ITEM	QTY
FL-648	2
FL-847	4
PS-19	11
R303	11
R320	8
R3x112	2
R3x119	4
B.O. PARTIAL 3"x3"x9"	2
R411	2
R4x18	16
R4x112	1
1" PVC SCHED40 x 9'-10"	1
PT CHUCK	1
4x4 J-BOX	2
B.O. 5" DIA	1
TEX. B.O. 13" SQ	1

CU. FT. CONC.	SQ. FT. W.W.F.
41.7 (1.54)	100

APPROXIMATE WEIGHT
6,255

REGISTERED PROFESSIONAL ENGINEER
WILLIAM RICHARD HEIDEN, III
74138
CIVIL
STATE OF CALIFORNIA

July 15, 2023

APPROVED: STATE OF CA - CERTIFIED DAA

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PFS CORPORATION - Cottage Grove, WI

NOTES:

1. EXCEPT R4x112, R303 & R4x18, REINFORCING BARS TO BE PLACED IN PAIRS ONE EACH FACE OF PANEL W/ 1" MIN. COVER
2. R4x18 BARS TO BE PLACED AT NEAR FACE W/ 1" COVER.
3. ALL OTHER BARS TO BE CENTERED IN PANEL.

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
CORTEZ SECTIONAL
BUILDING NUMBER CRS-108

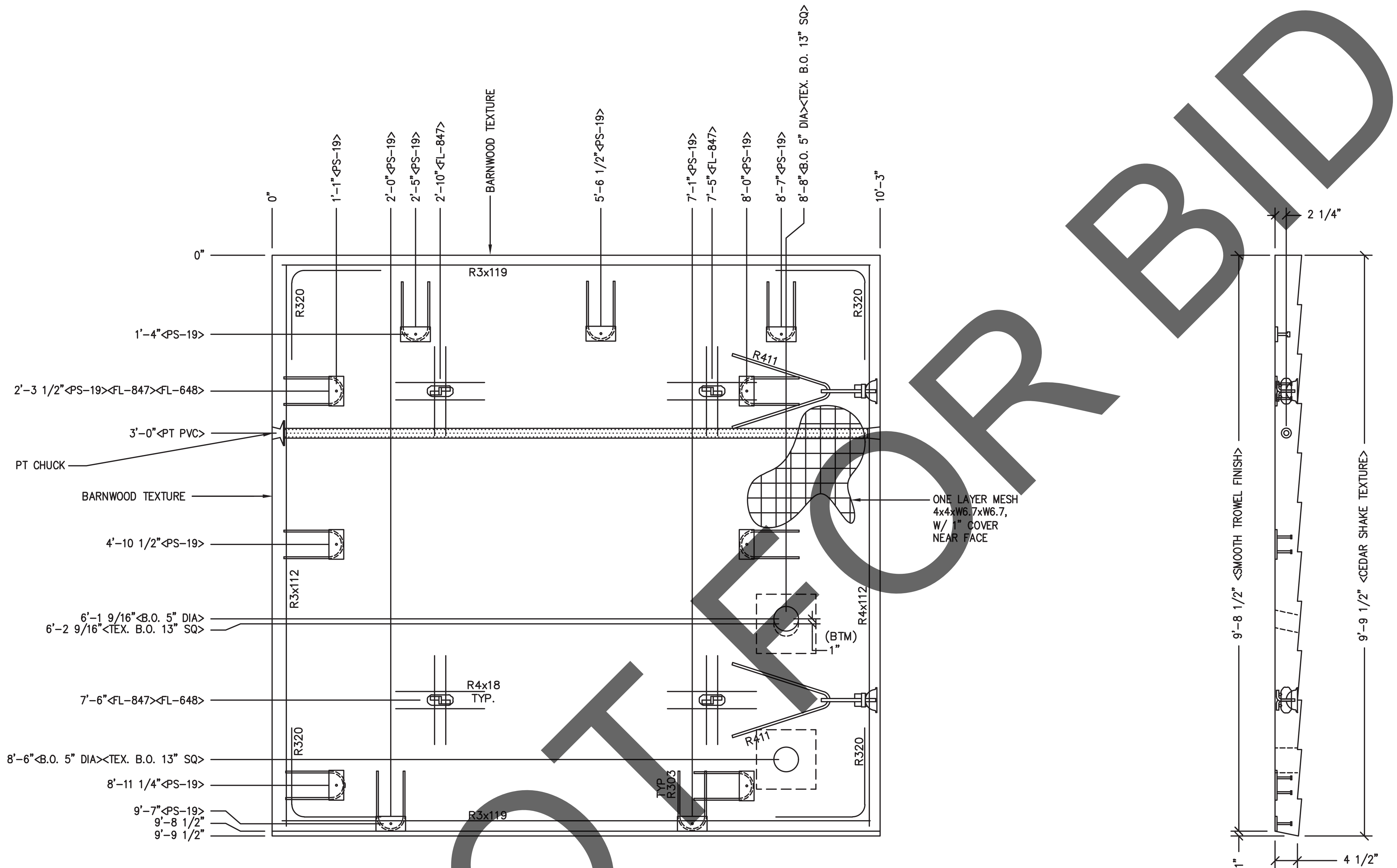
REV.	DESCRIPTION	APPROVAL	DATE

SCALE	1/2"=1'-0"	DATE	6-9-2023
DRAWN	G.OGG	FILE NO.	CRS-108
CHECKED	MCT	PLOT	24

ROOF SLAB
MARK R2

DWG NO.	SHEET	REV.
CRS-20	20 / 29	0

MARINE PACKAGE



NOT FOR BID

EMBEDDED MATERIALS	
ITEM	QTY
FL-648	2
FL-847	4
PS-19 SS	11
R303	11
R320	8
R3x112	2
R3x119	4
B.O. 5" DIA	2
R411	2
R4x18	16
R4x112	1
1" PVC SCHED40 x 9'-10"	1
PT CHUCK	1
TEX. B.O. 13" SQ	2

MARINE PACKAGE

CU. FT. CONC.	SQ. FT. W.W.F.
41.6 (1.54)	100

APPROXIMATE WEIGHT
6,233

REGISTERED PROFESSIONAL ENGINEER
WILLIAM RICHARD HEIDEN, III
74138
CIVIL
STATE OF CALIFORNIA

July 15, 2023

APPROVED: STATE OF CA - CERTIFIED DAA

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PFS CORPORATION - Cottage Grove, WI

NOTES:

1. EXCEPT R4x112, R303 & R4x18, REINFORCING BARS TO BE PLACED IN PAIRS ONE EACH FACE OF PANEL W/ 1" MIN. COVER
2. R4x18 BARS TO BE PLACED AT NEAR FACE W/ 1" COVER.
3. ALL OTHER BARS TO BE CENTERED IN PANEL.

LBFoster
CXT® Products

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362 Waverly Road Williamstown, WV 26187

PROJECT TITLE
CORTEZ SECTIONAL
BUILDING NUMBER CRS-108

NOTICE

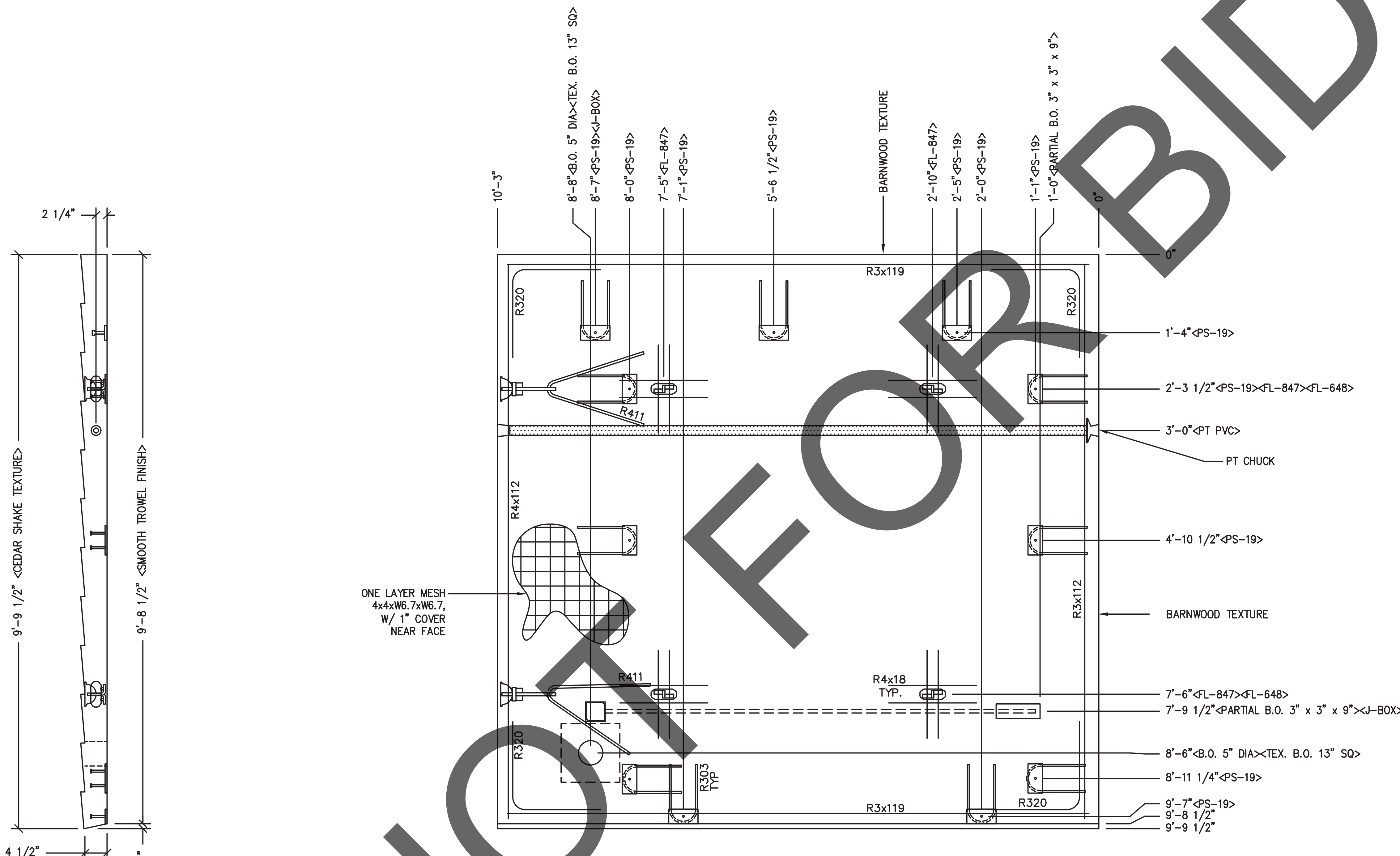
REV.	DESCRIPTION	APPROVAL	DATE

SCALE	1/2"=1'-0"	DATE	6-9-2023
DRAWN	G.OGG	FILE NO.	CRS-108
CHECKED	MCT	PLOT	24

ROOF SLAB
MARK R3

DWG NO.	SHEET	REV.
CRS-21	21 / 29	0

MARINE PACKAGE



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PFS

PFS CORPORATION - Cottage Grove, WI

NOTES:

1. EXCEPT R4x112, R303 & R4x18, REINFORCING BARS TO BE PLACED IN PAIRS ONE EACH FACE OF PANEL W/ 1" MIN. COVER
2. R4x18 BARS TO BE PLACED AT NEAR FACE W/ 1" COVER.
3. ALL OTHER BARS TO BE CENTERED IN PANEL.

EMBEDDED MATERIALS

ITEM	QTY
FL-648	2
FL-847	4
PS-19 SS	11
R303	11
R320	8
R3x112	2
R3x119	4
PARTIAL B.O. 3"x3"x9"	1
R411	2
R4x18	16
R4x112	1
1" PVC SCHED40 x 9'-10"	1
PT CHUCK	1
4x4 J-BOX	1
B.O. 5" DIA	1
TEX. B.O. 13" SQ	1

MARINE PACKAGE

CU. FT. CONC.	SQ. FT. W.W.F.
41.7 (1.54)	100

APPROXIMATE WEIGHT
6,255

REGISTERED PROFESSIONAL ENGINEER
WILLIAM RICHARD HEIDEN, III
74138
CIVIL
STATE OF CALIFORNIA

July 15, 2023

LBFoster
CXT® Products

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BUILDING NUMBER CRS-108

NOTICE

REV.	DESCRIPTION	APPROVAL	DATE

SCALE	1/2"=1'-0"	DATE	6-9-2023
DRAWN	G.OGG	FILE NO.	CRS-108
CHECKED	MCT	PLOT	24

ROOF SLAB
MARK R4

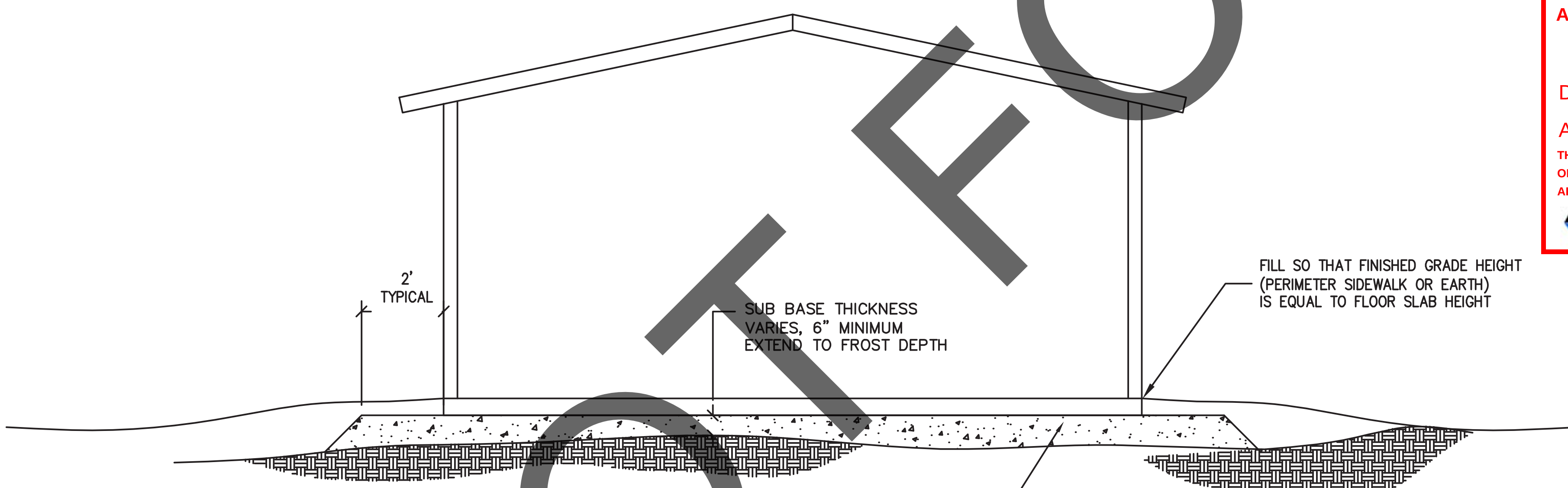
DWG NO.	SHEET	REV.
CRS-22	22 / 29	0

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 CALIFORNIA.

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



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).

APPROVED: STATE OF CA - CERTIFIED DAA

Based on the requirements of title 25 California code of regulations
Chapter 3 subchapter 2 Commercial Modular

Date: 07-20-2023 Expires: 10-31-2024

Approval # PFS: 23-006080

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PFS

PFS CORPORATION - Cottage Grove, WI

REGISTERED PROFESSIONAL ENGINEER
WILLIAM RICHARD HEIDEN, III
74138
CIVIL
STATE OF CALIFORNIA

July 15, 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

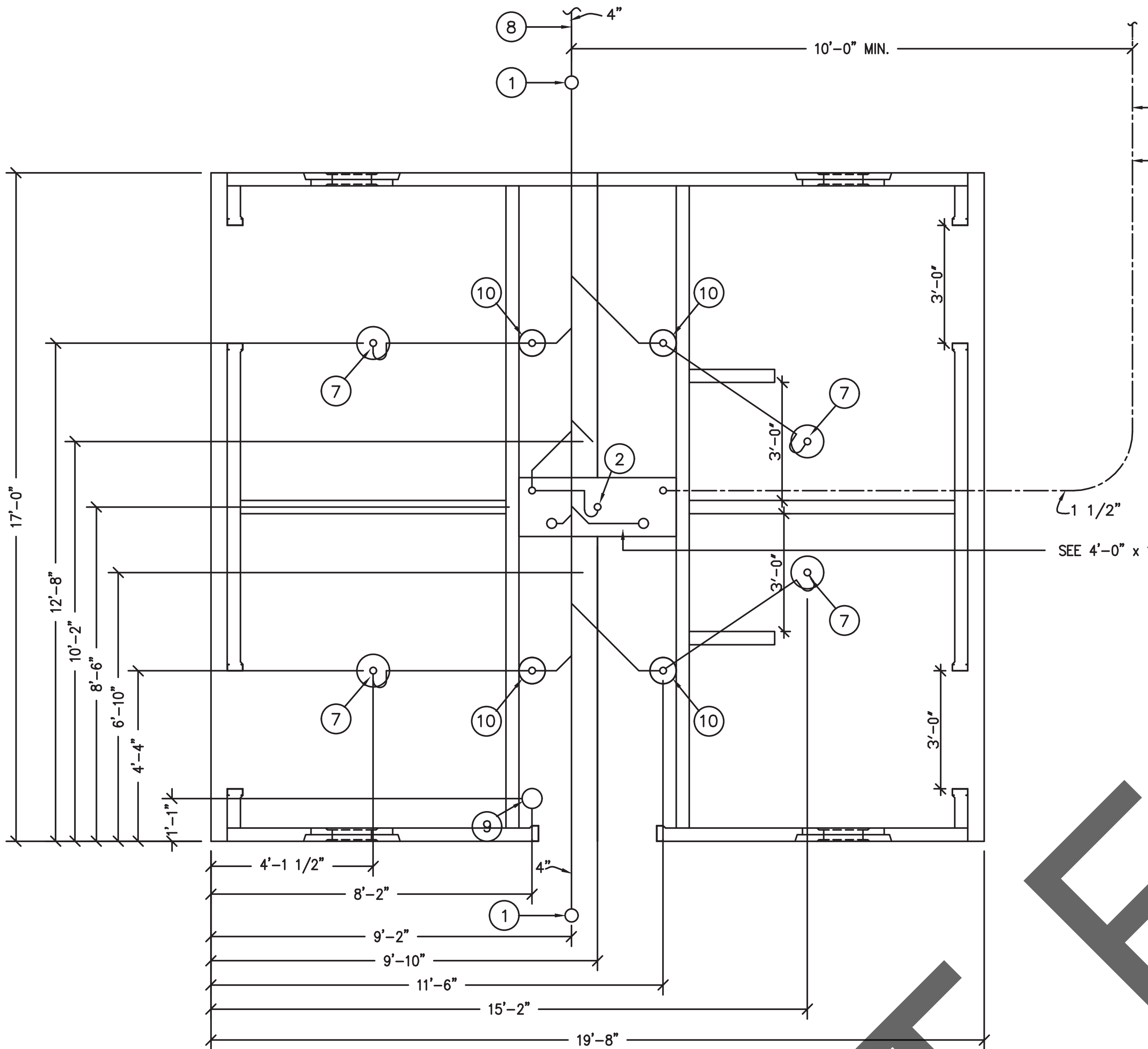
PROJECT TITLE
CORTEZ SECTIONAL
BUILDING NUMBER CRS-108

REV.	DESCRIPTION	APPROVAL	DATE

SCALE	1/4"=1'-0"	DATE	6-9-2023
DRAWN	G.OGG	FILE NO.	CRS-108
CHECKED	MCT	PLOT	48

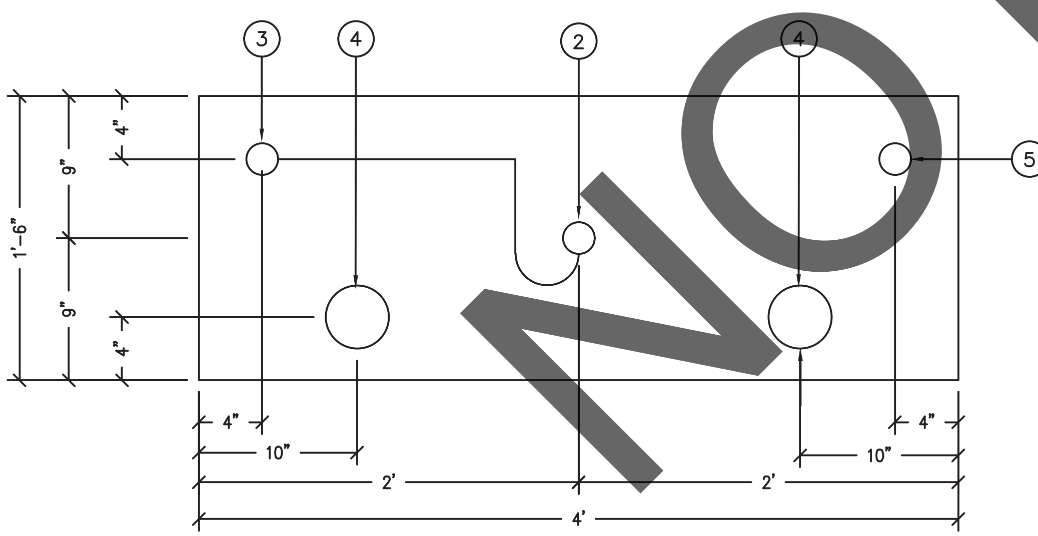
FOUNDATION DETAIL

DWG NO.	SHEET	REV.
CRS-23	23 / 29	0



SEE 4'-0" x 1'-6" BLOCKOUT DETAIL

FLOOR DRAIN BLOCKOUTS & BELOW FLOOR PIPING



4'-0" x 1'-6" BLOCKOUT DETAIL

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ALL PIPING INDICATED ON THIS SHEET IS NOT BY CXT

NOT FOR BID

PIPING LEGEND

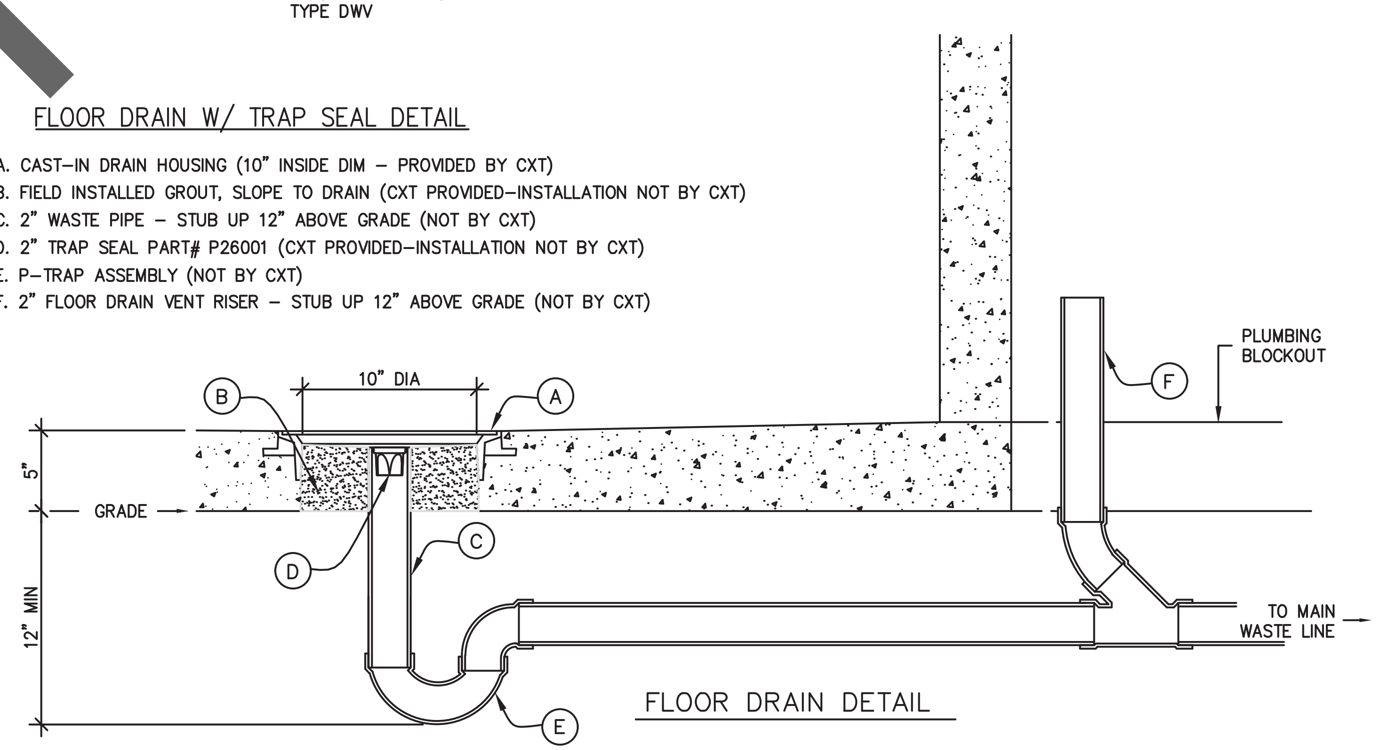
- 1 1/2" WATER SERVICE, ANNEALED "SOFT" COPPER, ASTM B88, TYPE "K" OR "L"
- BELOW FLOOR WASTE PIPING: SCH 40 PVC, ASTM D2665, TYPE DWV
- BELOW FLOOR VENT PIPING: SCH 40 PVC, ASTM D2665, TYPE DWV

BELOW FLOOR PIPING – KEY NOTES

1. 4" CLEAN OUT TO GRADE.
2. 2" FLOOR DRAIN. FIELD INSTALLED TRAP SEAL SYSTEM IF REQUIRED BY AUTHORITY HAVING JURISDICTION. (4'-0" x 1'-6" BLOCKOUT)
3. 2" VENT PIPE EXTENDED 12" ABOVE FINISHED FLOOR LEVEL, PROVIDE TEST PLUG. (4'-0" x 1'-6" BLOCKOUT)
4. 3" WASTE PIPE EXTENDED 12" ABOVE FINISHED FLOOR LEVEL, PROVIDE TEST PLUG. (4'-0" x 1'-6" BLOCKOUT)
5. 1 1/2" TYPE "K" OR "L" ANNEALED "SOFT" COPPER WATER SERVICE EXTENDED 12" ABOVE FINISHED FLOOR LEVEL, PROVIDE CAP AT END. (4'-0" x 1'-6" BLOCKOUT)
6. MIN. BURY PER LOCAL REQUIREMENTS TO PROTECT AGAINST FREEZING AND DAMAGE.
7. 2" FLOOR DRAIN. FIELD INSTALLED TRAP SEAL SYSTEM IF REQUIRED BY AUTHORITY HAVING JURISDICTION. (10" DIA BLOCKOUT)
8. 30" MIN. BURY, PROVIDE TRACER TAPE.
9. ELECTRICAL STUB UP, (6" DIA BLOCKOUT)
10. 2" VENT PIPES EXTENDED 12" ABOVE FINISHED FLOOR LEVEL, PROVIDE TEST PLUG. (8" DIA BLOCKOUT)

FLOOR DRAIN W/ TRAP SEAL DETAIL

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)



FLOOR DRAIN DETAIL

REGISTERED PROFESSIONAL ENGINEER
WILLIAM RICHARD HEIDEN, III
74138
CIVIL
STATE OF CALIFORNIA

July 15, 2023

LBFoster
CXT® Products

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BUILDING NUMBER CRS-108

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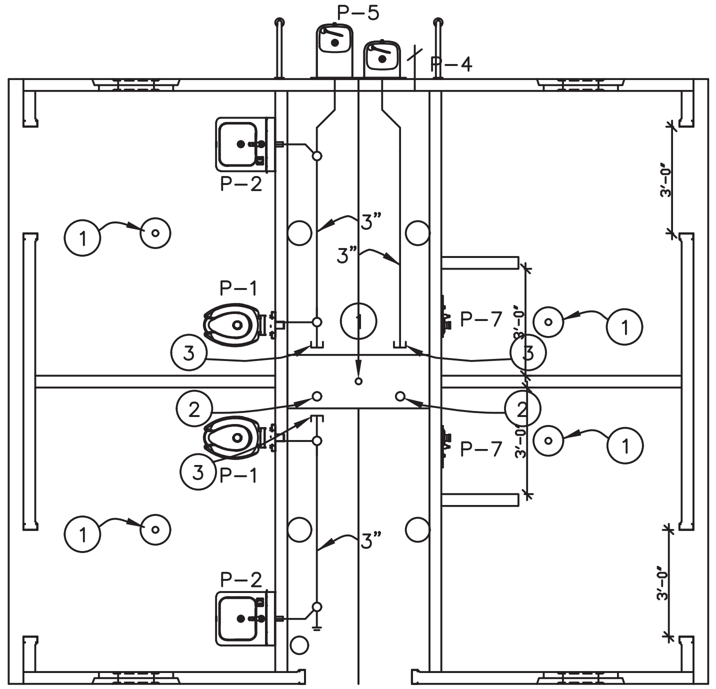
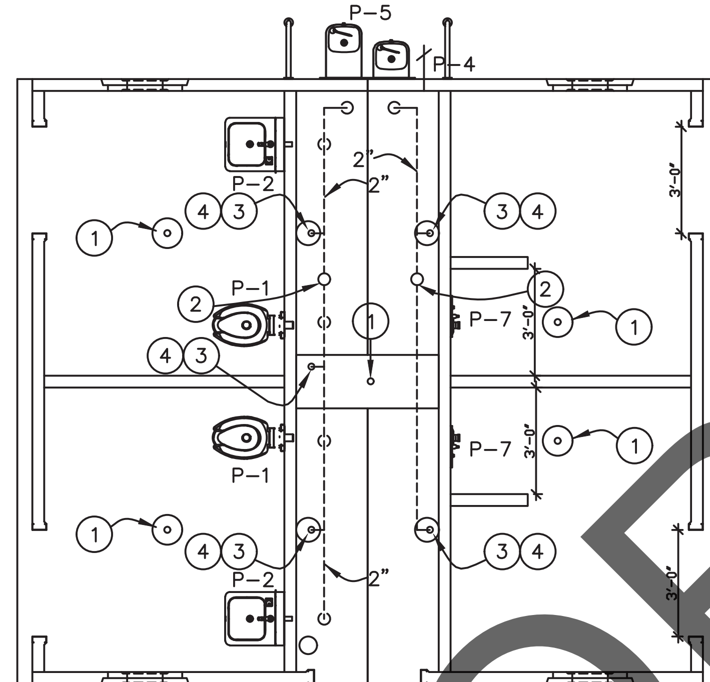
CHECKED	MCT	PLOT	48

FLOOR DRAIN LOCATIONS AND BELOW FLOOR PIPING

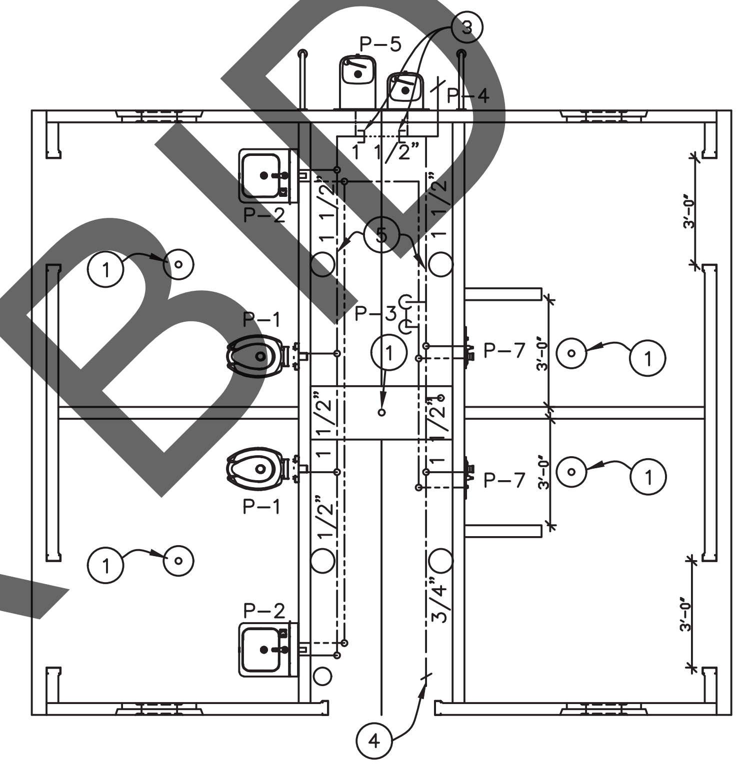
DWG NO.	SHEET	REV.
CRS-24	24 / 29	0



WASTE PIPING



VENT PIPING



WATER PIPING

NOT FOR BID

WASTE PIPING - KEY NOTES

1. 2" FLOOR DRAIN, FIELD INSTALLED (NOT BY CXT)
2. 3" 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.

VENT PIPING - KEY NOTES

1. 2" FLOOR DRAIN, FIELD INSTALLED (NOT BY CXT)
2. 4" VENT THROUGH ROOF.
3. 2" VENT WITH TEST PLUG.
4. FIELD INSTALLED 2" VENT PIPING FROM FLOOR DRAINS. (NOT BY CXT)

WATER PIPING - KEY NOTES

1. 2" FLOOR DRAIN, FIELD INSTALLED (NOT BY CXT)
2. FIELD INSTALLED 1 1/2" WATER SUPPLY WITH SHUT-OFF VALVE NEAR FLOOR. (NOT BY CXT)
3. CAPPED CW LINE. CONNECTION BETWEEN SIDES IS TO BE FIELD INSTALLED. (NOT BY CXT)
4. 3/4" HOSE BIBB WITH VACUUM BREAKER AND WHEEL HANDLE.
5. WATER PIPING ALONG WALL, SEE DIAGRAM ON CRS-26.

APPROVED: STATE OF CA - CERTIFIED DAA

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PFS CORPORATION - Cottage Grove, WI

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)

SPECIAL NOTES:
1. TOTAL FIXTURE COUNT: (6)
2. FLOWING PRESSURE: 45 PSI MIN, 80 PSI MAX
3. TOTAL DEVELOPED LENGTH = 39'-2"*

*APPROXIMATE DISTANCE FROM THE SOURCE TO THE FARTHEST FIXTURE

July 15, 2023

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PROJECT TITLE
CORTEZ SECTIONAL
BUILDING NUMBER CRS-108

REV.	DESCRIPTION	APPROVAL	DATE

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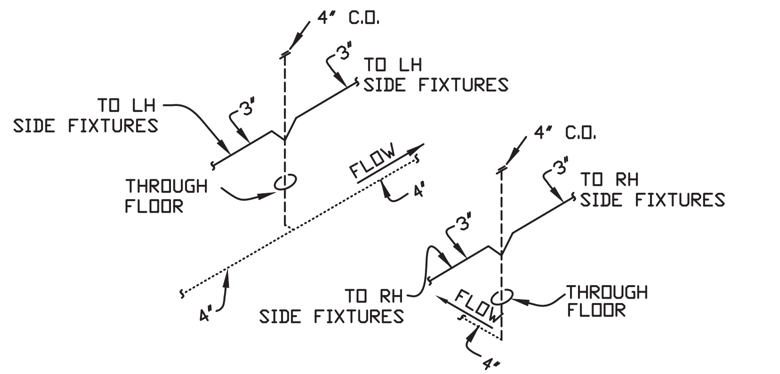
DRAWN	G.OGG	FILE NO.	CRS-108
CHECKED	MCT	PLOT	64

WATER, WASTE & VENT PIPING PLANS AND NOTES

DWG NO.	SHEET	REV.
CRS-25	25 / 29	0



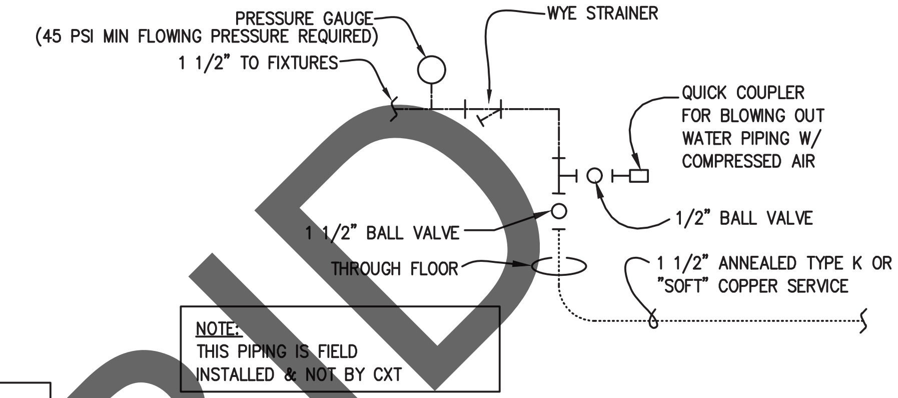
DETAIL OF FIELD INSTALLED WASTE CONNECTION

NTS

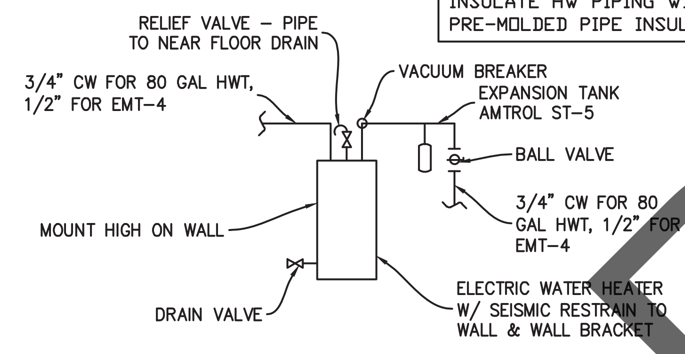
PIPING LEGEND

- 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

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

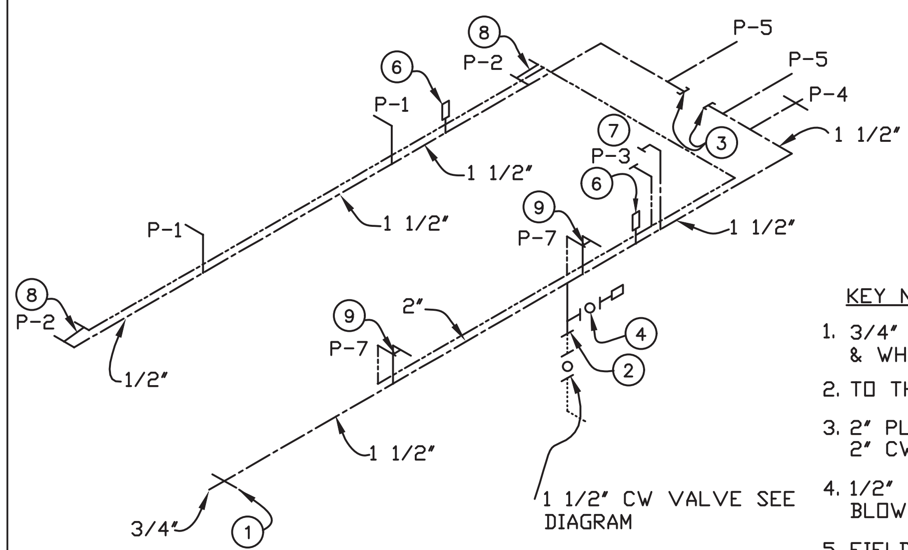


WATER SERVICE DETAIL



WATER HEATING PIPING DIAGRAM

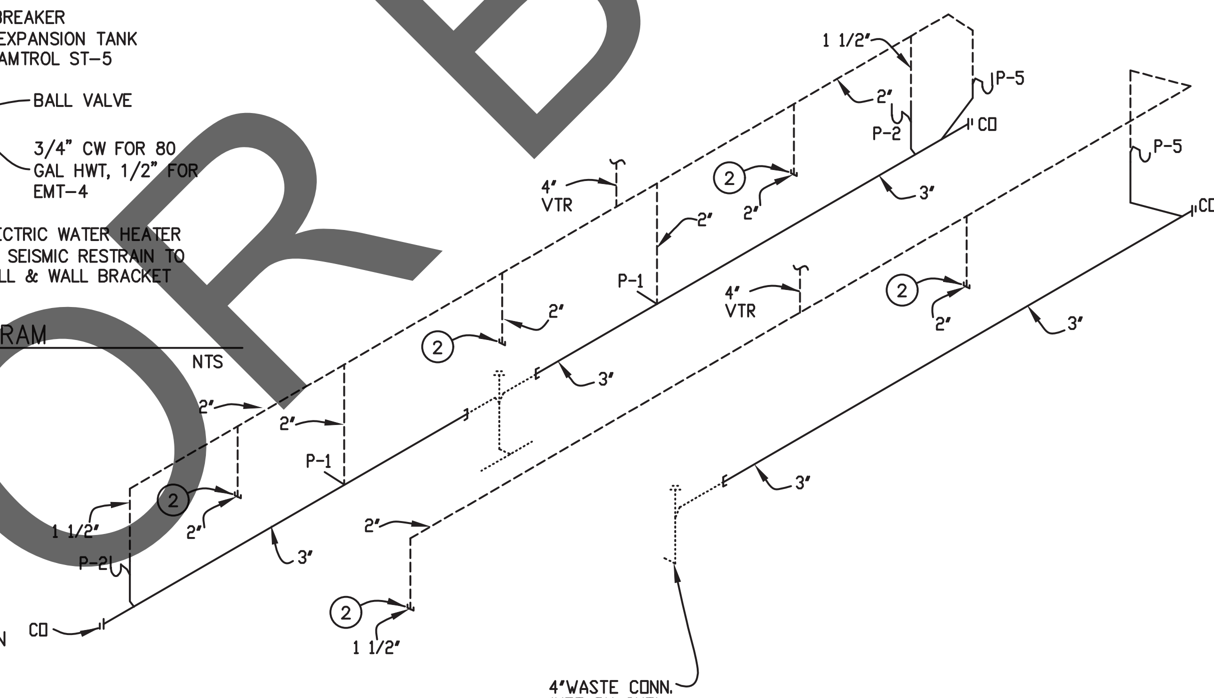
NTS



WATER PIPING RISER DIAGRAM

KEY NOTES

1. 3/4" HOSE BIBB WITH VACUUM BREAKER. & WHEEL HANDLE
2. TO THIS POINT BY CXT.
3. 2" PLUGGED CW LINE TO THIS POINT, BY CXT. 2" CW BETWEEN THESE POINTS, NOT BY CXT.
4. 1/2" AIR QUICK CONNECTION W/ BALL VALVE FOR BLOWING OUT WATER PIPING.
5. FIELD INSTALLED TRAP SEAL IF REQUIRED BY JURISDICTION HAVING AUTHORITY.
6. WATER HAMMER ARRESTOR
7. 80 GAL WATER HEATER
8. ASSE 1070 WATER TEMPERATURE LIMITING DEVICE
9. ASSE 1016 WATER TEMPERATURE LIMITING DEVICE



WASTE & VENT RISER DIAGRAM

NTS

PLUMBING FIXTURE SCHEDULE

SYM	DESCRIPTION	MANUFACTURER	CXT PART NUMBER	FLUSH VL/FAUCET	SUPPLIES	QTY	HW	CW	WASTE	VENT	SUPPLIES / NOTES
P-1	WATER CLOSET (PUSH BUTTON)	ACORN	PENAL-WARE 1680 SERIES 1680-W-1	SLOAN "ROYAL" #952-1.2 L-3 W=4"	SLOAN HY33A	2		1-1/4"	3"	2"	1. OFFSET FLUSH VALVE TAILPIECE PER ADA, RIGHT OR LEFT HAND, AS REQUIRED. PROVIDE FLUSH VALVE FOR 4" WALL THICKNESS. 2. MOUNT RIM AT 17" ABOVE FLOOR. 3. USE CLOSET GASKET JG13534 AND Z1203 FINISH KIT
P-2	LAVATORY (PUSH BUTTON)	ACORN	PENAL-WARE 1652 SERIES 2652-1-BP-04-M	SYMMONS SLS-7000		2	1/2"	1/2"	1-1/2"	1-1/2"	1. 1/2X15 COMP ANG LAV BSCR1915AC 2. 3 PC COVER SET PF202WH.
P-3	WATER HEATER	AO SMITH	DEN 80 – NONSIMULTANEOUS 5.5KW – 240V			1	3/4"	3/4"	–	–	1. ST-5 EXP. TANK 2. 80 GALLON ELECTRIC TANK TYPE, 240 VOLTS, SINGLE PHASE
P-4	HOSE BIB	PRIER	WALL HYDRANT: C-63N10 HYDRANT BOX C-634BX1 GASKET: C-634			1	–	3/4"	–	–	
P-5	DRINKING FOUNTAIN	HAWS	1119FR			1	–	(2) 1/2"	(2) 1-1/2"	(2) 1-1/2"	1. DUAL HEIGHT COMBINATION W/ CANE SKIRT
P-6	FLOOR DRAIN	TRAVIS	54960-CXT			4	–	–	2"	2"	1. 2" TRAP SEAL PART# P26001 (QTY 3)
		SIOUX CHIEF (CHASE)	840-2A			1					
P-7	ADA SHOWER	ACORN	ACORN ADA (PL54890) M1741-E706-1-8DIV			2	1/2"	1/2"	–	–	1. TSM #895, TSM #731-PHI LH & RH SEAT

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BUILDING NUMBER CRS-108

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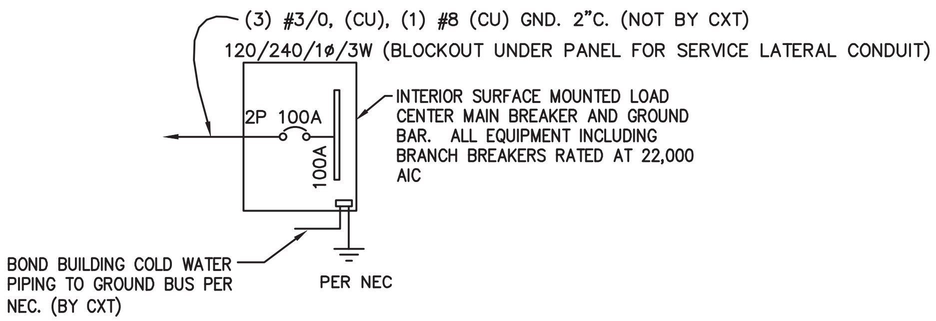
PLUMBING SCHEDULE
DIAGRAMS & NOTES

DWG NO.	SHEET	REV.
CRS-26	26 / 29	0



ONE-LINE POWER DIAGRAM
NTS

PANEL SCHEDULE

AMP 100
SURFACE MOUNT

PANEL
120/240V, 1P, 3W

TOTAL CONNECTED VA LOAD 12,380
TOTAL CALCULATED VA LOAD 15,141

CIRCUIT			LOAD				CIRCUIT			LOAD		
NO.	DESCRIPTION	OCP	TYPE	(VA)	(A)	PH.	NO.	DESCRIPTION	OCP	TYPE	(VA)	(A)
1	LIGHT AND FAN ROOM #1	1P/20A	N	97	0.8	A	2	LIGHT AND FAN ROOM #3	1P/20A	N	97	0.8
3	LIGHT AND FAN ROOM #2	1P/20A	N	97	0.8	B	4	LIGHT AND FAN ROOM #4	1P/20A	N	97	0.8
5	EXTERIOR LIGHTS	1P/20A	C	42	0.4	A	6	LIGHTS - CHASE	1P/20A	N	50	0.4
7	ROOM #1 & ROOM #2 RECEPTACLES	1P/20A	R	360	3.0	B	8	RECEPTACLE - CHASE	1P/20A	R	180	1.5
9	80 GALLON WATER HEATER	2P/60A	C	5,500	45.8	A	10	ROOM #3 & ROOM #4 RECEPTACLES	1P/20A	R	360	3.0
11			C	5,500		B	12					
13						A	14					
15						B	16					
17						A	18					
19						B	20					
21						A	22					
23						B	24					
25						A	26					
27						B	28					
29						A	30					
31						B	32					

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	11,042	x1.25	13,803	VA
(R)EC (1ST 10KVA)	900	x1.00	900	VA
(N)ON-CONTINUOUS	438	x1.00	438	VA
(L)ARGEST MOTOR	-	x1.25	-	VA
TOTAL LOAD	12,380		15,141	VA
			63.1	AMPS

NOT FOR BID

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 SIZED PER NEC. EXPOSED CONDUIT SHALL BE EMT/FMC, RECESSED SHALL BE PVC.
4. INSTALL ALL WIRING IN CONDUIT OR RELATED ENCLOSURES.
5. ALL ELECTRICAL INSTALLATIONS SHALL MEET THE 2022 CALIFORNIA ELECTRICAL CODE (CEC).
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 & MAY NOT SHOW EXACT LOCATIONS OF DEVICES. REFER TO WALL PANEL & OTHER DRAWINGS FOR EXACT LOCATIONS OF E-BOXES, ETC..
9. FOR WATER HEATER PROVIDE A 100 AMP DISCONNECT AND A 240V 60A CIRCUIT BREAKER WIRED WITH #6 AWG.

LIGHTING FIXTURE SCHEDULE

FIXTURE NUMBER	VOLTAGE	WATTS	DESCRIPTION
A	120	25	LUMINAIRE VPF84 INTERIOR LIGHT FIXTURE, VPF8 4FT NODIM 25W 40K MV CLP WHT WL 20CC SURFACE MOUNTED, LED LAMP 4 FT, WRAP AROUND LENS, LOW TEMPERATURE DRIVER, BUILT IN OCCUPANCY SENSOR ACTIVATED 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	WATTS	NOTES
EF-1	FANTECH	FG-4XL	150	6.0	120	0.75	72	1

NOTE
1. FANS LISTED FOR WET LOCATION, CONTROL VIA OCCUPANCY SENSOR. LOCATE OPEN FACE E-BOX ON EXTERIOR SIDE OF PANEL.

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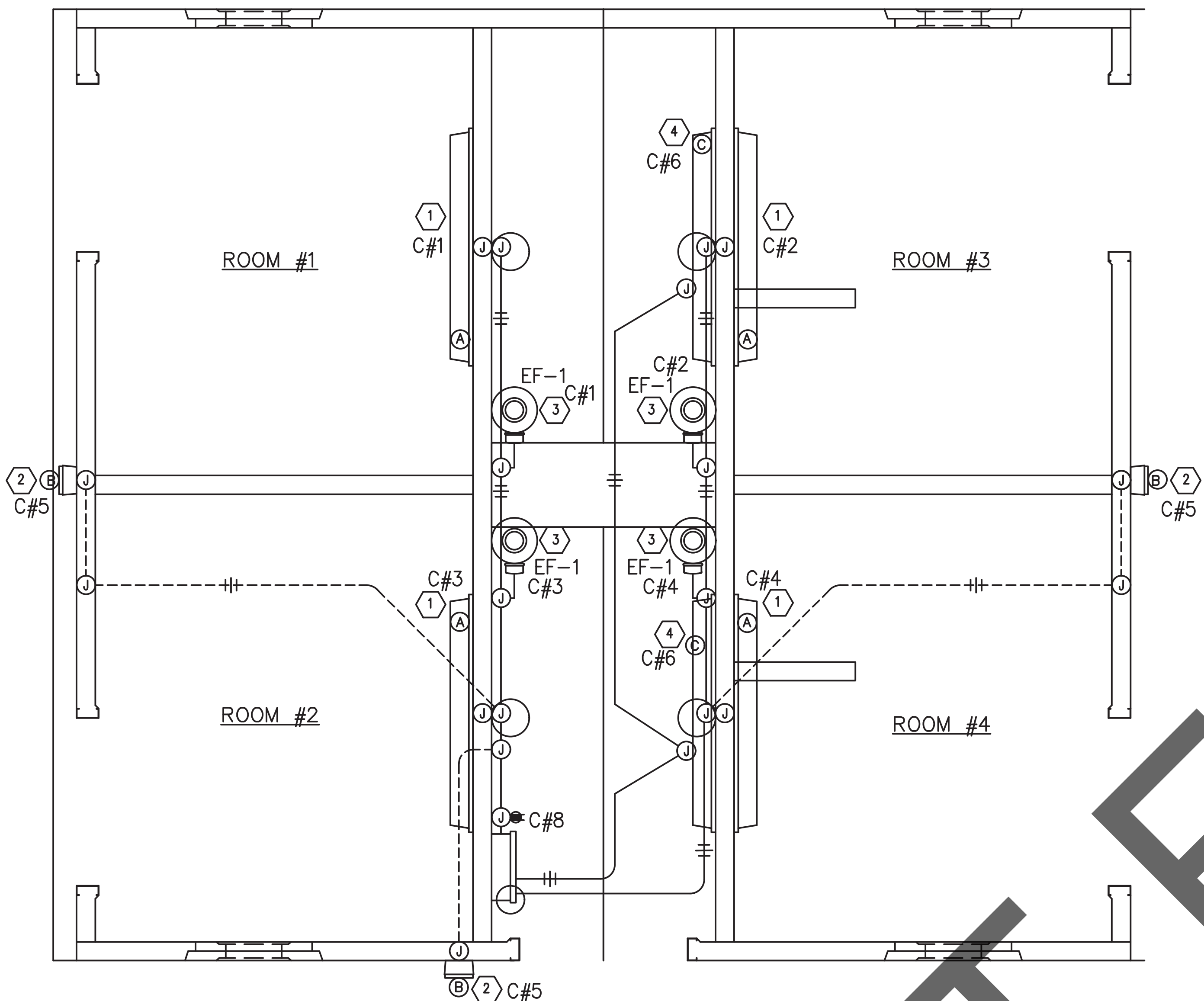
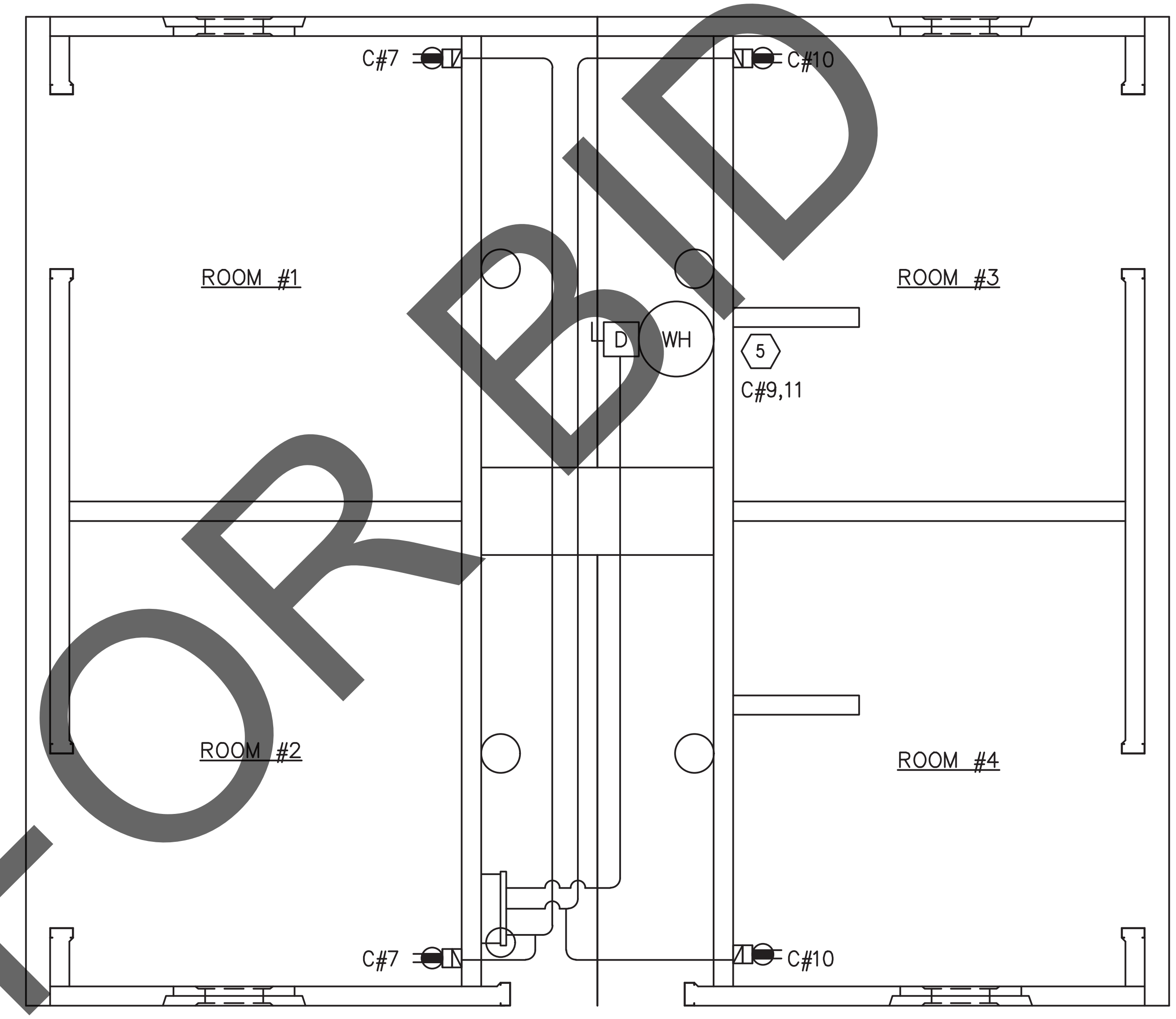
SCALE	3/8"=1'-0"	DATE	6-9-2023
DRAWN	G.OGG	FILE NO.	CRS-108
CHECKED	MCT	PLOT	32

ELECTRICAL NOTES & SCHEDULES

DWG NO.	SHEET	REV.
CRS-27	27 / 29	0



LIGHTING / EXHAUST FAN PLAN



RECEPTACLES & WATER HEATER PLAN

KEY NOTES

1. OCCUPANCY SENSOR CONTROLLED LIGHTS. EXHAUST FANS TO COME ON WITH RESTROOM LIGHTS.
2. LIGHT FIXTURE TO BE CONTROLLED BY PHOTOCELL. ROUTE WIRING IN CONCEALED CONDUIT.
3. CIRCUIT AS NEEDED FOR THE LOAD OF THE EXHAUST FAN. WIRE THRU OCCUPANCY SENSOR ISOLATED CONTACT. PROVIDE RIGID DUCTING TO EACH RESTROOM.
4. CHASE LIGHTS BY LOAD CENTER ARE SWITCH ACTIVATED..
5. PROVIDE WATER HEATER WITH A 100 AMP DISCONNECT, A 240V, 60 AMP DEDICATED CIRCUIT.

APPROVED: STATE OF CA - CERTIFIED DAA

Based on the requirements of title 25 California code of regulations
Chapter 3 subchapter 2 Commercial Modular

Date: 07-20-2023 Expires: 10-31-2024

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PFS CORPORATION - Cottage Grove, WI

SYMBOLS LEGEND

C#XX	CIRCUIT NUMBER
X	LED FIXTURE
X	LIGHT FIXTURE
	GFCI RECEPTACLE
	LOAD CENTER/PANEL-C
J	JUNCTION BOX
	EXHAUST FAN
3	SURFACE MOUNTED CONDUIT NUMBER DENOTES WIRES, (ALL #12AWG UNO) ALWAYS ONE WIRE TO BE GROUND WIRE
	SURFACE MOUNTED CONDUIT
	CONCEALED CONDUIT

July 15, 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
CORTEZ SECTIONAL
BUILDING NUMBER CRS-108

REV.	DESCRIPTION	APPROVAL	DATE

SCALE	3/8"=1'-0"	DATE	6-9-2023
DRAWN	G.OGG	FILE NO.	CRS-108
CHECKED	MCT	PLOT	32

ELECTRICAL PLAN,
LEGEND & NOTES

DWG NO.	SHEET	REV.
CRS-28	28 / 29	0

WALL PANEL W1

EMBEDDED MATERIALS

ITEM	QTY
AS-2	4
PS-2	10
PS-19	2
R411	2
R311	1
R320	4
R3x83	6
R3x192	2
FL-648	2
B.O. 4 1/2" DIA	2
W.C. WALL SLEEVE	2
B.O. 2" DIA	2
B.O. 3" DIA	2
4x4 E- BOX	4
ROUND MUD RING	2
RECT MUD RING	2
B.O. 1 1/2" DIA	2
4x4 J-BOX	2

CU. FT. CONC.	SQ. FT. W.W.F.
44.1 (1.63)	133

APPROXIMATE WEIGHT 6,616

WALL PANEL W2

EMBEDDED MATERIALS

ITEM	QTY
AS-2	4
PS-2	10
PS-19	2
R411	2
FL-648	2
R311	1
R320	4
R3x83	8
R3x94	6
R3x192	2
R3x92	2
ROUND MUD RING	1
4x4 J-BOX	1
B.O. 40 1/8" x 82 1/4"	2
SI-2 MOLD	2
B.O. PARTIAL 3"x6"x2" DP	1

CU. FT. CONC.	SQ. FT. W.W.F.
28.9 (1.07)	87

APPROXIMATE WEIGHT 4,335

WALL PANEL W3

EMBEDDED MATERIALS

ITEM	QTY
AS-2	3
PS-2	1
PS-10	2
PS-19	4
R303	2
R320	8
R3x82	4
R3x109	4
R3x48	2
R3x38	2
R322	4
B.O. MS-2	1
B.O. MS-4	1
TEX B.O. 16 3/4"x16 1/4"	1
B.O. 3 1/2" DIA	1
TEX B.O. 4" DIA	2

CU. FT. CONC.	SQ. FT. W.W.F.
21.9 (0.81)	66

APPROXIMATE WEIGHT 3,288

WALL PANEL W4

EMBEDDED MATERIALS

ITEM	QTY
AS-2	3
PS-2	2
PS-10	2
PS-19	4
R3x109	2
R320	8
R3x82	6
R3x48	2
R3x38	2
R322	4
R3x90	2
B.O. PARTIAL 3"x6"x2" DP	1
4x4 J-BOX	1
ROUND MUD RING	1
B.O. MS-2	1
B.O. MS-4	1

CU. FT. CONC.	SQ. FT. W.W.F.
18.1 (0.67)	55

APPROXIMATE WEIGHT 2,713

WALL PANEL W5

EMBEDDED MATERIALS

ITEM	QTY
AS-2	2
PS-2	4
PS-10	2
R320	8
R3x104	4
R3x78	4

CU. FT. CONC.	SQ. FT. W.W.F.
20.2 (0.75)	61

APPROXIMATE WEIGHT 3,025

WALL PANEL W6

EMBEDDED MATERIALS

ITEM	QTY
AS-2 SS	4
PS-2 SS	10
PS-19 SS	2
R411	2
R311	1
R320	4
R3x83	6
R3x192	2
FL-648	2
B.O. 4 1/2" DIA	2
R303	4
PS-3 SS	4
SHOWER WALL SLEEVE	2
4x4 E- BOX	4
ROUND MUD RING	2
RECT MUD RING	2
R3x98	8
4x4 J-BOX	2
R3x54	8

MARINE PACKAGE

CU. FT. CONC.	SQ. FT. W.W.F.
41.6 (1.35)	133

APPROXIMATE WEIGHT 6,240

WALL PANEL W7

EMBEDDED MATERIALS

ITEM	QTY
AS-2 SS	4
PS-2 SS	10
PS-19 SS	2
R411	2
FL-648	2
R311	1
R320	4
R3x83	8
R3x94	6
R3x192	2
R3x92	2
ROUND MUD RING	1
4x4 J-BOX	1
B.O. 40 1/8" x 82 1/4"	2
SI-2 MOLD	2
B.O. PARTIAL 3"x6"x2" DP	1

MARINE PACKAGE

CU. FT. CONC.	SQ. FT. W.W.F.
28.9 (1.07)	87

APPROXIMATE WEIGHT 4,335

WALL PANEL W8

EMBEDDED MATERIALS

ITEM	QTY
AS-2 SS	3
PS-2 SS	1
PS-10 SS	2
PS-19 SS	4
R303	2
R320	8
R3x82	4
R3x109	4
R3x48	2
R3x38	2
R322	4
B.O. MS-4	1
B.O. MS-2	1
TEX. B.O. 16 3/4"x16 1/4"	1
B.O. 3 1/2" DIA	1
TEX B.O. 4" DIA	2
HOSE BIB	1

MARINE PACKAGE

CU. FT. CONC.	SQ. FT. W.W.F.
21.9 (0.81)	66

APPROXIMATE WEIGHT 3,288

WALL PANEL W9

EMBEDDED MATERIALS

ITEM	QTY
AS-2 SS	3
PS-2 SS	2
PS-10 SS	2
PS-19 SS	4
R3x109	2
R320	8
R3x82	6
R3x48	2
R3x38	2
R322	4
R3x90	2
B.O. MS-2	1
B.O. MS-4	1

MARINE PACKAGE

CU. FT. CONC.	SQ. FT. W.W.F.
19.8 (0.74)	55

APPROXIMATE WEIGHT 2,970

WALL PANEL W10

EMBEDDED MATERIALS

ITEM	QTY
PS-20 SS	3
B-18	1

MARINE PACKAGE

CU. FT. CONC.	SQ. FT. W.W.F.
4.2 (0.16)	12

APPROXIMATE WEIGHT 630

FLOOR SLAB F1

EMBEDDED MATERIALS

ITEM	QTY
FL-648	4
PS-19	16
R303	10
R320	16
R3x90	2
R3x114	8
R3x200	10
R3x42	8
SECTIONAL B.O.	2
AS-3	4
FLOOR DRAIN	2
B.O. 18"x24"	1
B.O. 8" DIA	2
B.O. 6" DIA	1
1" PVC SCHED40 x 9'-5"	2
PT CHUCK	2
R411	4

CU. FT. CONC.	SQ. FT. W.W.F.
68.0 (2.52)	327

APPROXIMATE WEIGHT 10,205

FLOOR SLAB F2

EMBEDDED MATERIALS

ITEM	QTY
FL-648	4
PS-19 SS	16
R303	10
R320	16
R3x90	2
R3x114	8
R3x200	10
R3x42	4
SECTIONAL B.O.	2
AS-3	4
FLOOR DRAIN	2
B.O. 18"x24"	1
B.O. 8" DIA	2
PT CHUCK	2
1" PVC SCHED40 x 9'-5"	2
R411	4
PS-3 SS	2

MARINE PACKAGE

CU. FT. CONC.	SQ. FT. W.W.F.
68.1 (2.52)	327

APPROXIMATE WEIGHT 10,217

ROOF SLAB R1

EMBEDDED MATERIALS

ITEM	QTY
FL-648	2
FL-847	4
PS-19	11
R303	11
R320	8
R3x112	2
R3x119	4
B.O. 5" DIA	2
R411	2
R4x18	16
R4x112	1
1" PVC SCHED40 x 9'-10"	1
PT CHUCK	1
TEX. B.O. 13" SQ	2

CU. FT. CONC.	SQ. FT. W.W.F.
41.6 (1.54)	100

APPROXIMATE WEIGHT 6,233

ROOF SLAB R2

EMBEDDED MATERIALS

ITEM	QTY
FL-648	2
FL-847	4
PS-19	11
R303	11
R320	8
R3x112	2
R3x119	4
B.O. PARTIAL 3"x3"x9"	2
R411	2
R4x18	16
R4x112	1
1" PVC SCHED40 x 9'-10"	1
PT CHUCK	1
4x4 J-BOX	2
B.O. 5" DIA	1
TEX. B.O. 13" SQ	1

CU. FT. CONC.	SQ. FT. W.W.F.
41.7 (1.54)	100

APPROXIMATE WEIGHT 6,255

ROOF SLAB R3

EMBEDDED MATERIALS

ITEM	QTY
FL-648	2
FL-847	4
PS-19 SS	11
R303	11
R320	8
R3x112	2
R3x119	4
B.O. 5" DIA	2
R411	2
R4x18	16
R4x112	1
1" PVC SCHED40 x 9'-10"	1
PT CHUCK	1
TEX. B.O. 13" SQ	2

MARINE PACKAGE

CU. FT. CONC.	SQ. FT. W.W.F.
41.6 (1.54)	100

APPROXIMATE WEIGHT 6,233

ROOF SLAB R4

EMBEDDED MATERIALS

ITEM	QTY
FL-648	2
FL-847	4
PS-19 SS	11
R303	11
R320	8
R3x112	2
R3x119	4
PARTIAL B.O. 3"x3"x9"	1
R411	2
R4x18	16
R4x112	1
1" PVC SCHED40 x 9'-10"	1
PT CHUCK	1
4x4 J-BOX	1
B.O. 5" DIA	1
TEX. B.O. 13" SQ	1

MARINE PACKAGE

CU. FT. CONC.	SQ. FT. W.W.F.
41.7 (1.54)	100

APPROXIMATE WEIGHT 6,255

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PFS
PFS CORPORATION - Cottage Grove, WI

REGISTERED PROFESSIONAL ENGINEER
WILLIAM RICHARD HEIDEN, III
74138
CIVIL
STATE OF CALIFORNIA

July 15, 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
CORTEZ SECTIONAL
BUILDING NUMBER CRS-108

REV.	DESCRIPTION	APPROVAL	DATE

SCALE	3/8"=1'-0"	DATE	6-9-2023
DRAWN	GJOG	FILE NO.	CRS-108
CHECKED	MCT	PLOT	32

EMBEDDED MATERIALS

DWG NO.	SHEET	REV.
CRS-29	29 / 29	0

CXT Inc. (Precast Division)

Calculations
CORTEZ CRS-108
Structural Analysis

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

Design Standards
2022 California Building Code (2021 IBC)
ASCE 7-16/ ACI 318-19

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

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PFS CORPORATION - Cottage Grove, WI

REGISTERED PROFESSIONAL ENGINEER
WILLIAM RICHARD HEIDEN, III
74138
CIVIL
STATE OF CALIFORNIA

July 15, 2023

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PFS

PFS CORPORATION - Cottage Grove, WI

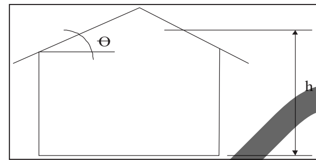
All attached documents are for reference only and designed or approved by others.

REGISTERED PROFESSIONAL ENGINEER
WILLIAM RICHARD HEIDEN, III
74138
CIVIL
STATE OF CALIFORNIA

July 15, 2023

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

CORTEZ CRS-108		
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	7.25 ft	Windward wall height
h.lee	7.25 ft	Leeward wall height
W.building	17 ft	Width of the building
L.building	18.83 ft	Length of the building
H.building	9.44 ft	Height of the building (to the ridge). Enter 0 if unknown.
Roof Rise	2.5625	Roof pitch (per foot)
ϑ	12.05 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

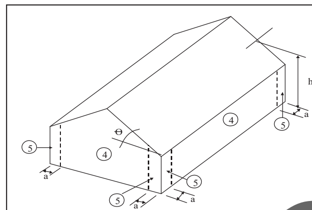


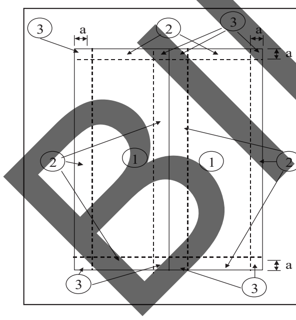
Kzt	1	Topographic factor
h	8.345 ft	Mean roof height
n_a	8.99	Natural frequency
Flexibility	Rigid	Building flexibility
α	9.5	Terrain factor
z_g	900 ft	Terrain factor

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	136.5 sq ft	740.4 sq ft	0 sq ft	0.00	0.00	0.00	0.00	Enclosed
Windward endwall	0 sq ft	141.9 sq ft	735.0 sq ft	0 sq ft	0.00	0.00	0.00	0.00	Enclosed
Leeward sidewall	0 sq ft	136.5 sq ft	740.4 sq ft	0 sq ft	0.00	0.00	0.00	0.00	Enclosed
Leeward endwall	0 sq ft	141.9 sq ft	735.0 sq ft	0 sq ft	0.00	0.00	0.00	0.00	Enclosed
Roof	0 sq ft	320.1 sq ft	556.8 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 =	0.90
	-0.478	Leeward wall (wind parallel to ridge) (Use with qh)	L/B =	1.11
	-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	-0.177	-0.811	-0.496

Roof Pressures Wind Perpendicular to Ridge w/ ϑ >= 10 deg	
w/ Negative Internal	1.22 psf
w/ Positive Internal	-36.12 psf

*WORST CASE LOADING

	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.	-0.90	-0.90	-0.50	-0.30
Roof Pressure Coefficients (Fig 27.3-1) PARALLEL to Ridge	-0.90	-0.90	-0.50	-0.30

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	-24.38 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	-39.28 psf
h/2 to h	-39.28 psf
h to 2h	-25.14 psf
Over 2h	-18.08 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

COMPONENTS & CLADDING

Wind Speed:	150 mph	Roof Slope:	2.56 : 12		
Exposure:	C	Mean Roof Height:	8.35 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

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PFS CORPORATION - Cottage Grove, WI

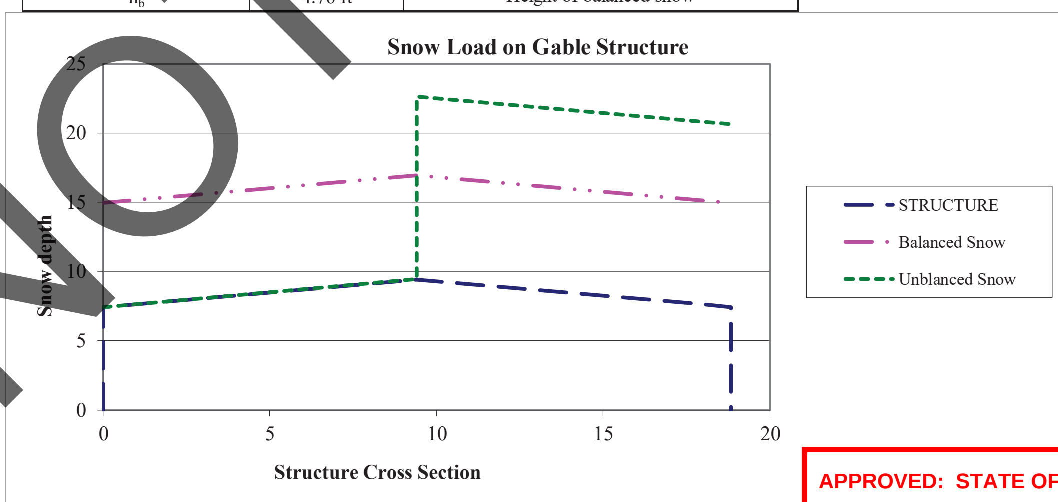
ASCE 7-16 SNOW LOAD CALCULATION

Category	II	IBC TABLE 1604.5: Risk Category of Buildings and Other Structures.
Exposure	C	See § 26.7.3: Exposure Categories, General.
Pg	170 psf	See ASCE Figure 7.2-1: Ground Snow Load
W.building	17 ft	Length of the building
L.building	18.83 ft	Width of the building
H.building	9.44 ft	Height of the building (to the ridge). Enter 0 if unknown.
Roof Rise (per foot)	2.5625	Roof pitch
ϑ	12.05 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	8.5 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	142.80 psf	Flat Roof Snow Load
P_s	142.80 psf	Sloped Roof Snow Load
Use unbalanced?	Yes	ASCE § 7.6.1
$P_{windward}$	0.00 psf	ASCE § 7.6.1
$P_{leeward\_1}$	170.00 psf	ASCE § 7.6.1
$P_{leeward\_2}$	170.00 psf	ASCE § 7.6.1
Distance from Ridge to Edge of $P_{leeward1}$ loading	8.5 ft	ASCE Figure 7.6-2

γ	30.00 pcf	Snow density	Eq. 7.7-1 of ASCE 7
S	4.682926829	Run per rise of 1	ASCE § 7.1
h_d	7.54 ft	Height of drifting snow on leeward side	
h_b	4.76 ft	Height of balanced snow	



Seismic Loads (ASCE 7-16)

CORTEZ CRS-108			
Category	II	IBC TABLE 1604.5: Risk Category of Buildings and Other Structures.	
Ss	1.714 g	Max. Earthquake Ground Motion of 0.2 sec Spectral Response Acceleration	*ASCE Figure 22-1*
S_1	1.389 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	8.55 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	

$Sms = Fa * S_S$	2.057 g	Adjusted MCE Spectral Response Acceleration at short periods	*ASCE 11.4-1*
$S_{ml} = F_v * S_1$	2.361 g	Adjusted MCE Spectral Response Acceleration at 1 sec period	*ASCE 11.4-2*
		(MCE = Maximum considered earthquake)	

$S_{DS} = 2/3\ Sm_s$	1.371 g	Design Spectral Acceleration Parameters	*ASCE 11.4-3*
$S_{D1} = 2/3\ Sm_1$	1.574 g	Design Spectral Acceleration Parameters	*ASCE 11.4-4*

I_E	1	Importance Factor	*ASCE Table 1.5-2*

Seismic Design Category		E
Based on S_{DS}	D	Table 11.6-1
Based on S_{D1}	E	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*
$T_s = S_{D1}/S_{DS}$	1.15 sec		
T	0.10 sec	Fundamental period of the structure (can be taken as Ta per ASCE 12.8.2)	

$C_s = S_{DS}/(R/I)$	0.343	*ASCE 12.8-2*	
$C_{s.min}$	0.174	*ASCE 12.8-5 & 12.8-6*	
$C_{s.max}$	3.934	*ASCE 12.8-3 & 12.8-4*	
C_s	0.343		
k	1.000	*ASCE 12.8.3*	
W	97.62 kip		
$V = C_s * W$	83.66 kip	*ASCE 12.8-1*	*Shear **with** snow load*
M_o =	703.5 k-ft		*Overturning Moment **with** snow load*
$V = C_s * W$	74.12 kip		*Shear **without** snow load*
M_o =	620.7 k-ft		*Overturning Moment **without** snow load*

WITH SNOW LOAD

						12.8-12	*12.8-11;11.7*			*12.10-1*
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)
Roof	8.35 ft	8.55 ft	142.8 psf	56.65 kip	484.5 k-ft	0.983	82.21 kip	82.21 kip	0.0 k-ft	31.07 kip
Walls	0.00 ft	0.00 ft								
Floor	0.21 ft	0.21 ft		40.97 kip	8.5 k-ft	0.017	1.45 kip	83.66 kip	686.0 k-ft	22.47 kip
Base	0 ft	0.00 ft	W=	97.62 kip	493.1 k-ft			M_o =	703.5 k-ft	

WITHOUT SNOW LOAD

						12.8-12	*12.8-11;11.7*			*12.10-1*
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)
Roof	8.35 ft	8.55 ft	0 psf	45.52 kip	389.4 k-ft	0.979	72.53 kip	72.53 kip	0.0 k-ft	24.97 kip
Walls	0.00 ft	0.00 ft								
Floor	0.21 ft	0.21 ft		40.97 kip	8.5 k-ft	0.021	1.59 kip	74.12 kip	605.3 k-ft	22.47 kip
Base	0 ft	0.00 ft	W=	86.49 kip	397.9 k-ft			Mo =	620.7 k-ft	

Center of Mass & Rigidity

CORTEZ CRS-108

	Upper Left = 0,0		Lower Right	X	Y	
				246	228	
Wall	X Relative Stiffness	Y Relative Stiffness	Shear Force lbs	Shear Force plf	Dist to CoRx dx (IN)	Dist to CoRy dy (IN)
W1	32.18%	0.00%	6,249	383	25.220	7.461
W2	19.32%	0.00%	3,751	230	110.220	7.476
W3	0.00%	21.92%	4,256	452	55.096	92.539
W4	0.00%	17.22%	3,344	355	67.468	107.461
W5	0.00%	9.89%	1,921	285	67.720	7.461
W6	29.18%	0.00%	5,667	347	26.780	7.459
W7	19.32%	0.00%	3,751	230	111.780	7.476
W8	0.00%	21.92%	4,256	452	56.654	92.539
W9	0.00%	19.15%	3,719	395	63.169	107.461
W10	0.00%	9.89%	1,921	285	69.280	7.461
P1-L	0.00%	0.00%	-	-	41.780	32.539
P1-R	0.00%	0.00%	-	-	41.780	47.461

Slab	Thickness	Weight	Left Edge X	Top Edge Y	Right Edge X	Bottom Edge Y	Snow/Live (psf)	Center of Gravity X	Center of Gravity Y	Live w snow	Live w/o snow
R1	4.5	6233	0	0	123	114	142.8	61.5	57.0	9014	6233
R2	4.5	6255	0	114	123	228	142.8	61.5	171.0	9036	6255
R3	4.5	6233	123	0	246	114	142.8	184.5	57.0	9014	6233
R4	4.5	6255	123	114	246	228	142.8	184.5	171.0	9036	6255
F1	5	10205	5	12	123	216	400	64.0	114.0	10205	0
F2	5	10217	123	12	241	216	400	182.0	114.0	10217	0
Totals		41095						123.4	113.1		

Torsional Eccentricity		Wgt (w snow)	Wgt (w/o snow)		wgt (w snow)	wgt (w/o snow)
ex	ey					
1.22	6.57	97,617	86,493	roof	56,648	45,524
Center of Gravity				floor	40,970	
X	Y					
123.4	113.1					
Center of Rigidty						
X	Y					
122.2	106.5					

Wall Overturning Checks Using Weight of Adjacent Walls
Force Transferred by Connections Between Walls

Wall	Anchorage Required to Resist Overturning From Design Moment (kip-ft)	Toward Lower Right Anchor Resistance Moment (kip-ft)	check	Toward Upper Left Anchor Resistance Moment (kip-ft)	check	Overturning status using just connection to adjacent walls
W1	78.41	91.63	OK	91.63	OK	None Required
W2	33.58	91.63	OK	91.63	OK	None Required
W3	61.85	38.84	Need More	53.89	Need More	TRY BASE ANCHORS
W4	46.17	38.84	Need More	53.89	OK	TRY BASE ANCHORS
W5	34.56	20.67	Need More	20.67	Need More	TRY BASE ANCHORS
W6	67.56	160.92	OK	160.92	OK	None Required
W7	33.58	91.63	OK	91.63	OK	None Required
W8	61.85	49.12	Need More	22.90	Need More	TRY BASE ANCHORS
W9	52.59	49.12	Need More	22.90	Need More	TRY BASE ANCHORS
W10	34.56	20.67	Need More	20.67	Need More	TRY BASE ANCHORS
P1-L	-0.77	0.00	OK	6.63	OK	None Required
P1-R	-0.77	0.00	OK	6.63	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

Wall	Design Moment (kip-ft)	Toward Lower Right Anchor Resistance Moment (kip-ft)	check	Toward Upper Left Anchor Resistance Moment (kip-ft)	check	Combined Loading Unity Check	Required Tension Capacity per Base Anchor (lb)
W1	78.41	90.67	OK	90.67	OK	OK	(405)
W2	33.58	88.47	OK	88.47	OK	OK	(1777)
W3	61.85	40.74	Try Both	39.55	Try Both	OK	1591
W4	46.17	37.13	Try Both	43.49	Try Both	OK	584
W5	34.56	21.63	Try Both	21.63	Try Both	OK	2058
W6	67.56	90.67	OK	90.67	OK	OK	(2858)
W7	33.58	88.47	OK	88.47	OK	OK	(1777)
W8	61.85	39.55	Try Both	40.74	Try Both	OK	2694
W9	52.59	43.49	Try Both	37.13	Try Both	OK	2367
W10	34.56	21.63	Try Both	21.63	Try Both	OK	2058
P1-L	-0.77	4.52	OK	3.31	OK	OK	(614)
P1-R	-0.77	4.52	OK	3.31	OK	OK	(614)

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

Wall	Base Anchor Shear Required (% Capacity)	Base Anchor Tension Available (% Capacity)	Available Overturning Resistance (kip-ft) From Base Anchors: Lower Right	Upper Left	Overturning Unity Check of Base Anchors: Lower Right	Upper Left
W1	0.0%	100.0%	182.30	182.30	OK	OK
W2	0.0%	100.0%	180.11	180.11	OK	OK
W3	0.0%	100.0%	79.58	93.44	OK	OK
W4	0.0%	100.0%	75.97	97.38	OK	OK
W5	0.0%	100.0%	42.29	42.29	OK	OK
W6	0.0%	100.0%	251.59	251.59	OK	OK
W7	0.0%	100.0%	180.11	180.11	OK	OK
W8	0.0%	100.0%	88.68	63.63	OK	OK
W9	0.0%	100.0%	92.61	60.03	OK	OK
W10	0.0%	100.0%	42.29	42.29	OK	OK
P1-L	0.0%	100.0%	4.52	9.95	OK	OK
P1-R	0.0%	100.0%	4.52	9.95	OK	OK

APPROVED: STATE OF CA - CERTIFIED DAA

Based on the requirements of title 25 California code of regulations
Chapter 3 subchapter 2 Commercial Modular

Date: 07-20-2023 Expires: 10-31-2024

Approval # PFS: 23-006080

THIS APPROVAL DOES NOT AUTHORIZE OR APPROVE ANY OMISSION OR DEVIATION FROM THE REQUIREMENTS OF STATE LAWS OR APPLICABLE LOCAL ORDINANCES . THIS APPROVAL IS LIMITED TO FACTORY-BUILT PORTION ONLY.

PFS CORPORATION - Cottage Grove, WI

ID: **CORTEZ CRS-108**

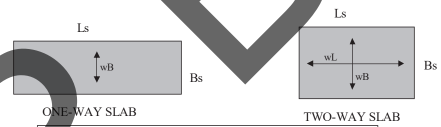
DESIGN OF ROOF PANELS MARK R1, R2, R3, & R4

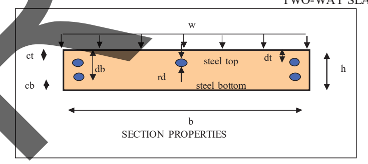
Notes:

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	

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	0.108 in	
I.cr	0.01 in^4	
a	0.32 in	





Geometric Properties

Ls (overall length of slab)	10.25 ft		
Bs (overall width of slab)	9.79 ft		
Design will be performed as :	**Two-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)	0 in		
cb (cover bottom)	1 in		
rd (assumed reinf. diameter)	0.319 in	*(if centered enter 0)*	
dt (effective depth top)	0.160 in		
db (effective depth bottom)	3.181 in		
oh1 (overhang length and qty for Bs)	12 in	1	*{qty of overhangs in Bs direction}*
oh2 (overhang length and qty for ls)	10 in	1	*{qty of overhangs in ls direction}*
Cs (% of DL used for Seismic)	0.343	*{from seismic analysis}*	
NBs (qty of walls in Bs direction)	2	*{walls that support one or more roof panels in the short direction}*	
Nls (qty of walls in ls direction)	2	*{walls that support one or more roof panels in the long direction}*	

(reinforcement ratio provided)		ω
$\rho_{provided}$ (bottom mesh)	0.0053	0.0848 psi
$\rho_{provided}$ (top mesh)	0.0000	0 psi
$\rho_{provided}$ (both layers)	0.0100	0.16 psi

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*

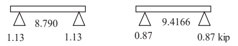
Wire Mesh (Top)		
Wire Size	NONE	
spacing		
Mesh Area	**0.00 in^2**	**= As'**

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

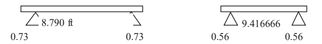
Loading

Design Loads	
Pressure on Slab	
D (Dead load))	60.938 psf
S (Snow Load)	170 psf
L (Live Load)	0 psf
Lr (Live Roof Load)	30 psf
W (Wind Load)	108.86 psf
E (Earthquake Load)	20.89 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 318-19 5.3.1c	399.555 psf	0.23 klf	0.17 klf

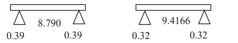


Unfactored Design Loads		Pressure on Section	Pressure on Section
Factored Loading per ACI	Factored Pressure on Slab **W**	**wB** = W*(L^4 / B^4 + L^4)*be	**wL** = W*(B^4 / B^4 + L^4)*be
ASCE 7-16 2.4.1 6	259.9245 psf	0.15 klf	0.11 klf



Sustained Loading	
Pressure on slab	**W**
D (Dead load)	60.938 psf
S (Snow Load)	170 psf
Lr (Live Roof Load)	30 psf

B (Span in the short direction)		8.790 ft	
L (Span in the long direction)		9.416666667 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
ASCE 7-16 CC.2-1b	145.938 psf	0.08 klf	0.063 klf



SUMMARY

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

ID: **CORTEZ CRS-108**

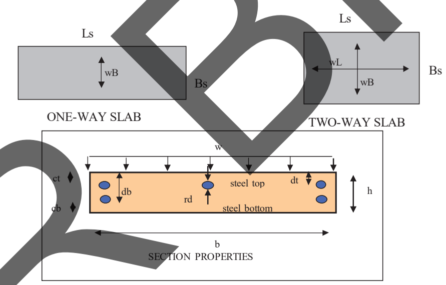
DESIGN OF ROOF PANELS MARK R1, R2, R3, & R4

Notes:

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	

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	0.108 in	
I.cr	0.01 in^4	
a	0.32 in	



Geometric Properties

Ls (overall length of slab)	10.25 ft		
Bs (overall width of slab)	9.79 ft		
Design will be performed as :	**Two-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)	0 in		
cb (cover bottom)	1 in		
rd (assumed reinf. diameter)	0.319 in	*(if centered enter 0)*	
dt (effective depth top)	0.160 in		
db (effective depth bottom)	3.181 in		
oh1 (overhang length and qty for Bs)	12 in	1	*{qty of overhangs in Bs direction}*
oh2 (overhang length and qty for ls)	10 in	1	*{qty of overhangs in ls direction}*
Cs (% of DL used for Seismic)	0.343	*{from seismic analysis}*	
NBs (qty of walls in Bs direction)	2	*{walls that support one or more roof panels in the short direction}*	
Nls (qty of walls in ls direction)	2	*{walls that support one or more roof panels in the long direction}*	

(reinforcement ratio provided)		ω
$\rho_{provided}$ (bottom mesh)	0.0053	0.0848 psi
$\rho_{provided}$ (top mesh)	0.0000	0 psi
$\rho_{provided}$ (both layers)	0.0100	0.16 psi

Flexure

Flexural Moments for Bs	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 = ϕf'cbd^2ω(1-0.59ω)	DM = Mu - ϕM	ϕMn =	Check ϕMn > Mu	% allowed
Mpos (positive Moment) = (wB*B^2) / 8	2.22 kip-ft	0.021	0.003	Tension	0.9	3.67 kip-ft		3.67 kip-ft	O.K.	60.49%

Flexural Moments for ls	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 = ϕf'cbd^2ω(1-0.59ω)	DM = Mu - ϕM	ϕMn =	Check ϕMn > Mu	% allowed
Mpos (positive Moment) = (wL*L^2) / 8	1.884 kip-ft	0.021	0.003	Tension	0.9	3.67 kip-ft		3.67 kip-ft	O.K.	51.34%

	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	0.115 kip-ft	-0.002	0.003	Compression	0.6	40.500 in^3	1.193 kip-ft	14.344 kip-ft	8.606 kip-ft	O.K.	1.34%
Mneg (negative Moment) = (wB*oh2^2) / 2	0.080 kip-ft	-0.002	0.003	Compression	0.6	40.500 in^3	1.193 kip-ft	14.344 kip-ft	8.606 kip-ft	O.K.	0.93%
Mneg (negative Moment) = (wL*oh1^2) / 2	0.085 kip-ft	-0.002	0.003	Compression	0.6	40.500 in^3	1.193 kip-ft	14.344 kip-ft	8.606 kip-ft	O.K.	0.99%
Mneg (negative Moment) = (wL*oh2^2) / 2	0.059 kip-ft	-0.002	0.003	Compression	0.6	40.500 in^3	1.193 kip-ft	14.344 kip-ft	8.606 kip-ft	O.K.	0.69%

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
Vu = wB (B/2)	1.01 kip	0.85	5.40 kip	4.59 kip	O.K.	22.03%
Vu for side overhang 1 = wB*oh1	0.23 kip	0.85	0.27 kip	0.23 kip	O.K.	99.97%
Vu for side overhang 1 = wB*oh2	0.19 kip	0.85	0.27 kip	0.23 kip	O.K.	83.30%

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)	0.30 kip	0.85	5.40 kip	4.59 kip	O.K.	6.46%
Vu for end overhang 2 = wL*oh1	0.06 kip	0.85	0.27 kip	0.23 kip	O.K.	27.38%
Vu for end overhang 2 = wL*oh2	0.05 kip	0.85	0.27 kip	0.23 kip	O.K.	22.82%

	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′	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 total long term deflection	% allowed - short term	% allowed - total long term
B	2.22 kip-ft	0.773 kip-ft	0.01 in^4	91.13 in^4	0.028 in	0.0053	0.9486	0.026 in	0.054 in	0.2930 in	0.2198 in	O.K.	O.K.	9.39%	24.39%
L	1.884 kip-ft	0.698 kip-ft	0.01 in^4	91.13 in^4	0.000 in	0.0053	0.9486	0.026 in	0.054 in	0.3139 in	0.2354 in	O.K.	O.K.	0.00%	22.77%

ID:	CORTEZ CRS-108
	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 20.2.2.2
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

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 Corridinate	97
Y Corridinate	16
Direction of Wall	Y
Center of gravity X	97.000
Center of gravity Y	114.000
Wall Weight	6616.000 lbs.
Central wall?	Yes
Wall that supports 2 roof panels?	Yes
lop (length of opening on wall)	0 ft
H (height of wall)	97.37 in
Lh (length of wall)	16.333 ft
Analyisis will be performed as :	One-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)	0.343
Eccentricity - Axial Load	1 in
Is wall Split	No

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)	170 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)	20.89 psf	Earthquake Load (EL.lat)	17.14 psf

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

Factored Axially Applied Loads

Factored Loading per ACI	ACI 318-19 5.3.1c
Factored Pressure on Roof Wr	399.555

Axial Pressure on Section	
PuB	1.62 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	259.9245 psf

Axial Pressure on Section	
PB	1.15 kip

Shear

Factored Loading per ACI	ACI 318-19 5.3.1c
Vu = wuB*(Bw-2db) / 2	0 kip
φVc/2	1.33 kip
Check Shear	O.K.

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 / H^4 + L^4)	0 klf
Hw = W*(L^4 / H^4 + L^4)	0.09 klf

Unfactored Laterally Applied Loads

Unfactored Pressure on Wall uWw	58.99 psf

Lateral Pressure on Section	
Lw = W*(L^4 / H^4 + L^4)	0 klf
Hw = W*(L^4 / H^4 + L^4)	0.06 klf

Deflection

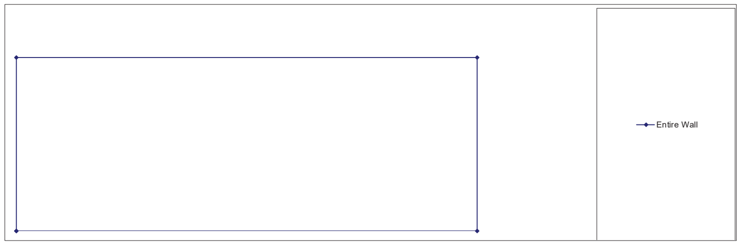
Service Loads		
Axial	1.15 kip	
Lateral	0 klf	
Allowed service deflection	0.27 in	
Msa	0.575 kip-in	
M	0.577 kip-in	ACI 14-9
Δs	0.002 in	ACI 14-8
Check deflection	O.K.	

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	
Mcr	16.971 kip-in	ACI 24.2.3.5
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	
I.cr	2.93 in^4	
a = As * fy / (0.85 * f'c *b)	0.33483 psi	
c	0.419 in	
Ase	0.22 in^2	
Icrdeflection	3.47 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	
$\rho_{provided}$ (reinforcement ratio provided)	0.0090	
a	0.32 in	

Flexure

Assumption check			
Span	Hw	Lw	
εt	0.011	0.011	
εty	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	0.808 kip-ft		
Mu	0.810 kip-ft	0.810 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	40.18%	40.18%	



REINFORCEMENT AT OPENINGS

Loading	
Pu (factorized load from roof)	0.23 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:	ϕMn = ϕAsFy(db - a/2)	Check ϕMn > 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
4	187	187	42.920	90.67	90.67	91.63	91.63

Total Tension	Base Anchors					
14.392	Dist	Tension (kip)	Shear	L - Dist	Moment +	Moment -
Base Anchor 1	9 in	**3.56**	**9.25**	187 in	0.128 kip*ft	55.399 kip*ft
Base Anchor 2	63 in	3.64	12.21	133 in	6.440 kip*ft	28.701 kip*ft
Base Anchor 3	133 in	3.64	12.21	63 in	28.701 kip*ft	6.440 kip*ft
Base Anchor 4	187 in	**3.56**	**9.25**	9 in	55.399 kip*ft	0.128 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	2	**1.531**	8.615	60.62%	W3	0	196.000	3.062	0.000	50.013
Wall Connection 2	2	**2.703**	5.097	50.00%	W5	98	98.000	5.097	41.621	41.621
Wall Connection 3	2	**1.531**	8.266	60.62%	W4	196	0.000	3.062	50.013	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
18458	42920	24462	956	20365	OK	4614	(24462)	OK

RIGIDITY

CALCULATED VALUES	100%	Final	12.39954898

Pier Label	Length (inches)	Height (inches)	Fixed Top? (Y/N)	Useable? (Y/N)	Stiffness (k) (1000 kip / IN)	Deflection (in / 1000 kip)
Entire Wall	196	97.37	Y	Y	12.400	0.081

Combine Logic					
First Segment	Second Segment	Re-Name	Combine/Subtract	Method	Combined
Entire Wall	0	Final			12.400

ID:	CORTEZ CRS-108
	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)*
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*

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 Corridinate	12
Y Corridinate	16
Direction of Wall	Y
Center of gravity X	12.000
Center of gravity Y	114.014
Wall Weight	4335.000 lbs.
Central wall?	Yes
Wall that supports 2 roof panels?	Yes
lop (length of opening on wall)	0 ft
H (height of wall)	97.37 in
Lh (length of wall)	16.333 ft
Analyisis will be performed as :	One-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)	0.343
Eccentricity - Axial Load	1 in
Is wall Split	No

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)	170 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)	20.89 psf	Earthquake Load (EL.lat)	17.14 psf

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

Factored Axially Applied Loads

Factored Loading per ACI	ACI 318-19 5.3.1c
Factored Pressure on Roof Wr	399.555

Axial Pressure on Section	
PuB	1.52 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	259.9245 psf

Axial Pressure on Section	
PB	1.05 kip

Shear

Factored Loading per ACI	ACI 318-19 5.3.1c
Vu = wuB*(Bw-2db) / 2	0 kip
φVc/2	1.33 kip
Check Shear	O.K.

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 / H^4 + L^4)	0 klf
Hw = W*(L^4 / H^4 + L^4)	0.09 klf

Unfactored Laterally Applied Loads

Unfactored Pressure on Wall uWw	58.99 psf

Lateral Pressure on Section	
Lw = W*(L^4 / H^4 + L^4)	0 klf
Hw = W*(L^4 / H^4 + L^4)	0.06 klf

Deflection

Service Loads		
Axial	1.05 kip	
Lateral	0 klf	
Allowed service deflection	0.27 in	
Msa	0.525 kip-in	
M	0.527 kip-in	ACI 14-9
Δs	0.002 in	ACI 14-8
Check deflection	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	
Mcr	16.971 kip-in	ACI 24.2.3.5
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	
I.cr	2.93 in^4	
a = As * fy / (0.85 * f'c *b)	0.33483 psi	
c	0.419 in	
Ase	0.22 in^2	
Icrdeflection	3.47 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	
$\rho_{provided}$ (reinforcement ratio provided)	0.0090	
a	0.32 in	

Flexure

Assumption check			
Span	Hw	Lw	
εt	0.011	0.011	
εty	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	0.803 kip-ft		
Mu	0.800 kip-ft	0.800 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	39.68%	39.68%	

APPROVED: STATE OF CA - CERTIFIED DAA

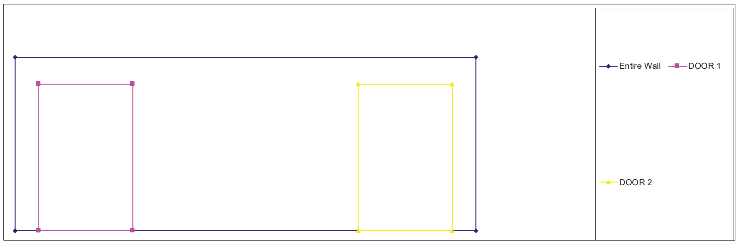
Based on the requirements of title 25 California code of regulations
Chapter 3 subchapter 2 Commercial Modular

Date: 07-20-2023 Expires: 10-31-2024

Approval # PFS: 23-006080

THIS APPROVAL DOES NOT AUTHORIZE OR APPROVE ANY OMISSION OR DEVIATION FROM THE REQUIREMENTS OF STATE LAWS OR APPLICABLE LOCAL ORDINANCES . THIS APPROVAL IS LIMITED TO FACTORY-BUILT PORTION ONLY.

PFS CORPORATION - Cottage Grove, WI



REINFORCEMENT AT OPENINGS

Loading	
Pu (factorized load from roof)	0.23 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	0.83 ft	0 ft	3.34 ft	1.26 ft	1144.65	0.06 klf	0.29 klf	0.27 kip-ft
DOOR 2	12.16 ft	0 ft	3.34 ft	1.26 ft	1144.65	0.06 klf	0.29 klf	0.27 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	0.005 in^2	No. 3	1	6.69 kip-ft	O.K.
DOOR 2	0.9	0.005 in^2	No. 3	1	6.69 kip-ft	O.K.

CONNECTIONS

			Full Resistance Value				
			Overturning				
Base Anchors			Lateral	Base Anchors		Wall-Wall Connection	
Quantity	Maximum	Maximum	Shear	Moment +	Moment -	Moment +	Moment -
in Shear	R - Distance	L - Distance	kip	kip - ft	kip - ft	kip - ft	kip - ft
4	193	193	31.085	88.47	88.47	91.63	91.63

Total Tension	Base Anchors					
14.048	Dist	Tension (kip)	Shear	L - Dist	Moment +	Moment -
Base Anchor 1	3 in	***3.38***	***3.33***	193 in	0.013 kip*ft	54.410 kip*ft
Base Anchor 2	63 in	3.64	12.21	133 in	6.240 kip*ft	27.809 kip*ft
Base Anchor 3	133 in	3.64	12.21	63 in	27.809 kip*ft	6.240 kip*ft
Base Anchor 4	193 in	***3.38***	***3.33***	3 in	54.410 kip*ft	0.013 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	Overturning Moment Resistance (kip-ft) Low Right
Wall Connection 1	2	***1.531***	5.596	39.38%	W3	0	196.000	3.062	0.000	50.013
Wall Connection 2	2	***2.703***	5.097	50.00%	W5	98	98.000	5.097	41.621	41.621
Wall Connection 3	2	***1.531***	5.370	39.38%	W4	196	0.000	3.062	50.013	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
11236	31085	19849	574	12225	OK	2809	(19849)	OK

RIGIDITY

CALCULATED VALUES	60%	Final	7.443635058

	Pier Label	Length (inches)	Height (inches)	Fixed Top? (Y/N)	Useable? (Y/N)	Stiffness (k) (1000 kip / IN)	Deflection (in / 1000 kip)
	Entire Wall	196	97.37	Y	Y	12.400	0.081
DOOR 1	A'	196	82.25	Y	Y	15.006	0.067
	A	9.96	82.25	Y	N	0.000	0.000
	B	145.96	82.25	Y	Y	10.698	0.093
DOOR 2	B'	196	82.25	Y	Y	15.006	0.067
	C	145.92	82.25	Y	Y	10.695	0.094
	D	10	82.25	Y	N	0.000	0.000

	Combine Logic					
	First Segment	Second Segment	Re-Name	Combine/Subtract	Method	Combined
DOOR 1	Entire Wall	A'	A'a	-	Deflection	0.014
	A	B	AB	+	Stiffness	10.698
	A'a	AB	A'b	+	Deflection	0.107
DOOR 2	A'b	B'	B'a	-	Deflection	0.041
	C	D	CD	+	Stiffness	10.695
	B'a	CD	Final	+	Deflection	0.134

APPROVED: STATE OF CA - CERTIFIED DAA
Based on the requirements of title 25 California code of regulations
Chapter 3 subchapter 2 Commercial Modular
Date: 07-20-2023 Expires: 10-31-2024
Approval # PFS: 23-006080
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PFS CORPORATION - Cottage Grove, WI

ID:	CORTEZ CRS-108
	DESIGN OF WALL MARKED W3

Notes

ACI's Alternate Design of Slender Walls

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

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

Geometric Properties

X Corridinate	10
Y Corridinate	14
Direction of Wall	X
Center of gravity X	67.124
Center of gravity Y	14.000
Wall Weight	3288.000 lbs.
Central wall?	Yes
Wall that supports 2 roof panels?	No
lop (length of opening on wall)	0 ft
H (height of wall)	87 in
Lh (length of wall)	9.417 ft
Analyisis 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)	0.343
Eccentricity - Axial Load	1 in
Is wall Split	No

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)	170 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)	20.89 psf	Earthquake Load (EL.lat)	17.14 psf

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

Factored Axially Applied Loads

Factored Loading per ACI	ACI 318-19 5.3.1c
Factored Pressure on Roof Wr	399.555

Axial Pressure on Section	
PuB	1.58 kip

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

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)	0.07 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

Unfactored Axially Applied Loads

Unfactored Pressure on Roof uWr	259.9245 psf

Axial Pressure on Section	
PB	1.11 kip

Deflection

Service Loads		
Axial	1.11 kip	
Lateral	0.02 klf	
Allowed service deflection	0.24 in	
Msa	2.132 kip-in	
M	2.139 kip-in	ACI 14-9
Δs	0.006 in	ACI 14-8
Check deflection	O.K.	

Shear

Factored Loading per ACI	ACI 318-19 5.3.1c
Vu = wuB*(Bw-2db) / 2	0.06 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	
Mcr	16.971 kip-in	ACI 24.2.3.5
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	
I.cr	2.93 in^4	
a = As * fy / (0.85 * f'c *b)	0.33483 psi	
c	0.419 in	
Ase	0.22 in^2	
Icrdeflection	3.47 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	
$\rho_{provided}$ (reinforcement ratio provided)	0.0090	
a	0.32 in	

Flexure

Assumption check			
Span	Hw	Lw	
εt	0.011	0.011	
εty	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	0.526 kip-ft		
Mu	0.530 kip-ft	0.530 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	26.29%	26.29%	

APPROVED: STATE OF CA - CERTIFIED DAA

Based on the requirements of title 25 California code of regulations
Chapter 3 subchapter 2 Commercial Modular

Date: 07-20-2023 Expires: 10-31-2024

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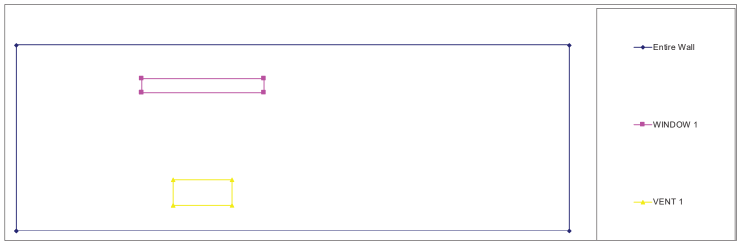
PFS CORPORATION - Cottage Grove, WI



REINFORCEMENT AT OPENINGS

Loading	
Pu (factorized load from roof)	0.23 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	2.13 ft	5.38 ft	2.08 ft	1.3 ft	59.28	0.07 klf	0.3 klf	0.11 kip-ft
VENT 1	2.67 ft	1 ft	1 ft	5.25 ft	50.00	0.26 klf	0.49 klf	0.04 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	0.002 in^2	No. 3	1	6.92 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	98	94	36.627	40.74	39.55	38.84	53.89

Total Tension	Base Anchors					
10.923	Dist	Tension (kip)	Shear	L - Dist	Moment +	Moment -
Base Anchor 1	19 in	3.64	12.21	94 in	1.118 kip*ft	28.521 kip*ft
Base Anchor 2	56.5 in	3.64	12.21	56.5 in	9.883 kip*ft	10.304 kip*ft
Base Anchor 3	98 in	3.64	12.21	15 in	29.735 kip*ft	0.726 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	Overturning Moment Resistance (kip-ft) Low Right
Wall Connection 1	2	***2.703***	4.596	25.00%	W2	2	111.000	4.596	0.766	42.511
Wall Connection 2	2	***2.703***	5.252	25.00%	W1	87	26.000	5.252	38.077	11.379

Wall Shear Checks

Shear Connections at Base			Wall Shear Capacity			Required Shear Capacity (lb) per Base Connector		Reserve
Design Force (lb)	Capacity (lb)	Reserve Capacity	Design (PLF)	Resistance (PLF)	check			Capacity
12050	36627	24577	1130	19669	OK	4017	(24577)	OK

RIGIDITY

CALCULATED VALUES	97%	Final	6.983420972

	Pier Label	Length (inches)	Height (inches)	Fixed Top? (Y/N)	Useable? (Y/N)	Stiffness (k) (1000 kip / IN)	Deflection (in / 1000 kip)
	Entire Wall	113	87	Y	Y	7.230	0.138
WINDOW 1	A'	113	6.84	Y	Y	110.002	0.009
	A	25.56	6.84	Y	Y	24.331	0.041
	B	62.48	6.84	Y	Y	60.654	0.016
VENT 1	B'	113	12	Y	Y	62.543	0.016
	C	32.04	12	Y	Y	17.005	0.059
	D	68.96	12	Y	Y	37.928	0.026

	Combine Logic					
	First Segment	Second Segment	Re-Name	Combine/Subtract	Method	Combined
WINDOW 1	Entire Wall	A'	A'a	-	Deflection	0.129
	A	B	AB	+	Stiffness	84.986
	A'a	AB	A'b	+	Deflection	0.141
VENT 1	A'b	B'	B'a	-	Deflection	0.125
	C	D	CD	+	Stiffness	54.933
	B'a	CD	Final	+	Deflection	0.143

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PFS CORPORATION - Cottage Grove, WI

ID:	CORTEZ CRS-108
	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)*
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*

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 Corridinate	10
Y Corridinate	214
Direction of Wall	X
Center of gravity X	54.753
Center of gravity Y	214.000
Wall Weight	2713.000 lbs.
Central wall?	Yes
Wall that supports 2 roof panels?	No
lop (length of opening on wall)	0 ft
H (height of wall)	87 in
Lh (length of wall)	9.417 ft
Analyisis 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)	0.343
Eccentricity - Axial Load	1 in
Is wall Split	No

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)	170 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)	20.89 psf	Earthquake Load (EL.lat)	17.14 psf

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

Factored Axially Applied Loads

Factored Loading per ACI	ACI 318-19 5.3.1c
Factored Pressure on Roof Wr	399.555

Axial Pressure on Section	
PuB	1.54 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	259.9245 psf

Axial Pressure on Section	
PB	1.07 kip

Shear

Factored Loading per ACI	ACI 318-19 5.3.1c
Vu = wuB*(Bw-2db) / 2	0.06 kip
ϕVc/2	1.33 kip
Check Shear	O.K.

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)	0.07 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	1.07 kip	
Lateral	0.02 klf	
Allowed service deflection	0.24 in	
Msa	2.112 kip-in	
M	2.118 kip-in	ACI 14-9
Δs	0.006 in	ACI 14-8
Check deflection	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	
Mcr	16.971 kip-in	ACI 24.2.3.5
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	
I.cr	2.93 in^4	
a = As * fy / (0.85 * f'c *b)	0.33483 psi	
c	0.419 in	
Ase	0.22 in^2	
Icrdeflection	3.47 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	
$\rho_{provided}$ (reinforcement ratio provided)	0.0090	
a	0.32 in	

Flexure

Assumption check			
Span	Hw	Lw	
εt	0.011	0.011	
εty	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	0.524 kip-ft		
Mu	0.520 kip-ft	0.520 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	25.79%	25.79%	

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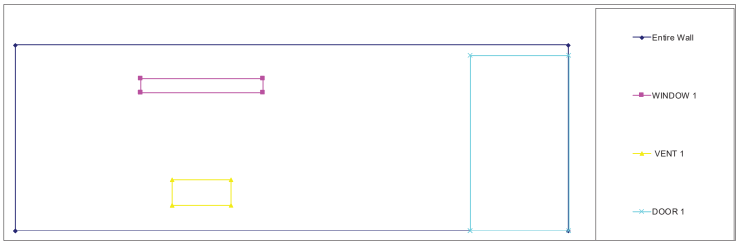

REINFORCEMENT AT OPENINGS

Loading	
Pu (factorized load from roof)	0.23 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	2.13 ft	5.38 ft	2.08 ft	1.3 ft	59.28	0.07 klf	0.3 klf	0.11 kip-ft
VENT 1	2.67 ft	1 ft	1 ft	5.25 ft	50.00	0.26 klf	0.49 klf	0.04 kip-ft
DOOR 1	7.74 ft	0 ft	1.68 ft	0.4 ft	575.40	0.02 klf	0.25 klf	0.06 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	0.002 in^2	No. 3	1	6.92 kip-ft	O.K.
VENT 1	0.9	0 in^2	No. 3	0	0 kip-ft	O.K.
DOOR 1	0.9	0.005 in^2	No. 3	1	1.56 kip-ft	O.K.

CONNECTIONS

			Full Resistance Value				
			Overturning				
Base Anchors			Lateral	Base Anchors		Wall-Wall Connection	
Quantity	Maximum	Maximum	Shear	Moment +	Moment -	Moment +	Moment -
in Shear	R - Distance	L - Distance	kip	kip - ft	kip - ft	kip - ft	kip - ft
3	75	94	36.627	37.13	43.49	38.84	53.89

Total Tension	Base Anchors					
10.923	Dist	Tension (kip)	Shear	L - Dist	Moment +	Moment -
Base Anchor 1	19 in	3.64	12.21	94 in	1.460 kip*ft	28.521 kip*ft
Base Anchor 2	56.5 in	3.64	12.21	56.5 in	12.914 kip*ft	10.304 kip*ft
Base Anchor 3	75 in	3.64	12.21	38 in	22.756 kip*ft	4.661 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	Overturning Moment Resistance (kip-ft) Low Right
Wall Connection 1	2	***2.703***	4.596	25.00%	W2	2	111.000	4.596	0.766	42.511
Wall Connection 2	2	***2.703***	5.252	25.00%	W1	87	26.000	5.252	38.077	11.379

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
9523	36627	27104	888	15455	OK	3174	(27104)	OK

RIGIDITY

CALCULATED VALUES	76%	Final	5.487089359

	Pier Label	Length (inches)	Height (inches)	Fixed Top? (Y/N)	Useable? (Y/N)	Stiffness (k) (1000 kip / IN)	Deflection (in / 1000 kip)
	Entire Wall	113	87	Y	Y	7.230	0.138
WINDOW 1	A'	113	6.84	Y	Y	110.002	0.009
	A	25.56	6.84	Y	Y	24.331	0.041
	B	62.48	6.84	Y	Y	60.654	0.016
VENT 1	B'	113	12	Y	Y	62.543	0.016
	C	32.04	12	Y	Y	17.005	0.059
	D	68.96	12	Y	Y	37.928	0.026
DOOR 1	C'	113	82.2	Y	Y	7.790	0.128
	E	92.88	82.2	Y	Y	5.973	0.167
	F	-0.04	82.2	Y	N	0.000	0.000

	Combine Logic					
	First Segment	Second Segment	Re-Name	Combine/Subtract	Method	Combined
WINDOW 1	Entire Wall	A'	A'a	-	Deflection	0.129
	A	B	AB	+	Stiffness	84.986
	A'a	AB	A'b	+	Deflection	0.141
VENT 1	A'b	B'	B'a	-	Deflection	0.125
	C	D	CD	+	Stiffness	54.933
	B'a	CD	B'b	+	Deflection	0.143
DOOR 1	B'b	C'	C'a	-	Deflection	0.015
	E	F	EF	+	Stiffness	5.973
	C'a	EF	Final	+	Deflection	0.182

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PFS CORPORATION - Cottage Grove, WI

ID:	CORTEZ CRS-108
	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)*
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*

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 Corridinate	14
Y Corridinate	114
Direction of Wall	X
Center of gravity X	54.500
Center of gravity Y	114.000
Wall Weight	3025.000 lbs.
Central wall?	Yes
Wall that supports 2 roof panels?	Yes
lop (length of opening on wall)	0 ft
H (height of wall)	107.75 in
Lh (length of wall)	6.750 ft
Analyisis 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)	0.343
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

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)	170 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)	20.89 psf	Earthquake Load (EL.lat)	17.14 psf

Factored Axially Applied Loads

Factored Loading per ACI	ACI 318-19 5.3.1c
Factored Pressure on Roof Wr	399.555

Axial Pressure on Section	
PuB	1.65 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	259.9245 psf

Axial Pressure on Section	
PB	1.18 kip

Shear

Factored Loading per ACI	ACI 318-19 5.3.1c
Vu = wuB*(Bw-2db) / 2	0.11 kip
ϕVc/2	1.33 kip
Check Shear	O.K.

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)	0.07 klf
Hw = W*(H^4 / H^4 + L^4)	0.02 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)	0.04 klf
Hw = W*(H^4 / H^4 + L^4)	0.01 klf

Deflection

Service Loads		
Axial	1.18 kip	
Lateral	0.04 klf	
Allowed service deflection	0.30 in	
Msa	5.428 kip-in	
M	5.456 kip-in	ACI 14-9
Δs	0.024 in	ACI 14-8
Check deflection	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	
Mcr	16.971 kip-in	ACI 24.2.3.5
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	
I.cr	2.93 in^4	
a = As * fy / (0.85 * f'c *b)	0.33483 psi	
c	0.419 in	
Ase	0.22 in^2	
Icrdeflection	3.48 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	
$\rho_{provided}$ (reinforcement ratio provided)	0.0090	
a	0.32 in	

Flexure

Assumption check			
Span	Hw	Lw	
εt	0.011	0.011	
εty	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	0.269 kip-ft		
Mu	0.270 kip-ft	0.270 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	13.39%	13.39%	

APPROVED: STATE OF CA - CERTIFIED DAA
Based on the requirements of title 25 California code of regulations
Chapter 3 subchapter 2 Commercial Modular

Date: 07-20-2023 Expires: 10-31-2024

Approval # PFS: 23-006080

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PFS CORPORATION - Cottage Grove, WI

REINFORCEMENT AT OPENINGS

Loading	
Pu (factorized load from roof)	0.23 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:	**ϕMn** = ϕAsFy(db - a/2)	Check ϕMn > 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
2	71	71	20.474	21.63	21.63	20.67	20.67

Total Tension	Base Anchors					
7.168	Dist	Tension (kip)	Shear	L - Dist	Moment +	Moment -
Base Anchor 1	10 in	***3.58***	***10.24***	71 in	0.421 kip*ft	21.205 kip*ft
Base Anchor 2	71 in	***3.58***	***10.24***	10 in	21.205 kip*ft	0.421 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	Overturning Moment Resistance (kip-ft) Low Right
Wall Connection 1	2	***1.531***	9.192	50.00%	W2	0	81.000	3.062	0.000	20.669
Wall Connection 2	2	***1.531***	10.504	50.00%	W1	81	0.000	3.062	20.669	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
6099	20474	14375	712	20365	OK	3050	(14375)	OK

RIGIDITY

CALCULATED VALUES	100%	Final	3.152243123

Pier Label	Length (inches)	Height (inches)	Fixed Top? (Y/N)	Useable? (Y/N)	Stiffness (k) (1000 kip / IN)	Deflection (in / 1000 kip)
Entire Wall	81	107.75	Y	Y	3.152	0.317

Combine Logic					
First Segment	Second Segment	Re-Name	Combine/Subtract	Method	Combined
Entire Wall	0	Final			3.152

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PFS CORPORATION - Cottage Grove, WI

ID:	CORTEZ CRS-108
	DESIGN OF WALL MARKED W6

Notes	

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

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	

Geometric Properties

X Corridinate	149
Y Corridinate	16
Direction of Wall	Y
Center of gravity X	149.000
Center of gravity Y	113.997
Wall Weight	6240.000 lbs.
Central wall?	Yes
Wall that supports 2 roof panels?	Yes
lop (length of opening on wall)	0 ft
H (height of wall)	97.37 in
Lh (length of wall)	16.333 ft
Analyisis will be performed as :	One-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)	0.343
Eccentricity - Axial Load	1 in
Is wall Split	No

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)	170 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)	20.89 psf	Earthquake Load (EL.lat)	17.14 psf

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

Factored Axially Applied Loads

Factored Loading per ACI	ACI 318-19 5.3.1c
Factored Pressure on Roof Wr	399.555

Axial Pressure on Section	
PuB	1.6 kip

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

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 / H^4 + L^4)	0 klf
Hw = W*(L^4 / H^4 + L^4)	0.09 klf

Unfactored Laterally Applied Loads

Unfactored Pressure on Wall uWw	58.99 psf

Lateral Pressure on Section	
Lw = W*(L^4 / H^4 + L^4)	0 klf
Hw = W*(L^4 / H^4 + L^4)	0.06 klf

Unfactored Axially Applied Loads

Unfactored Pressure on Roof uWr	259.9245 psf

Axial Pressure on Section	
PB	1.14 kip

Deflection

Service Loads		
Axial	1.14 kip	
Lateral	0 klf	
Allowed service deflection	0.27 in	
Msa	0.570 kip-in	
M	0.572 kip-in	ACI 14-9
Δs	0.002 in	ACI 14-8
Check deflection	O.K.	

Shear

Factored Loading per ACI	ACI 318-19 5.3.1c
Vu = wuB*(Bw-2db) / 2	0 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	
Mcr	16.971 kip-in	ACI 24.2.3.5
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	
I.cr	2.93 in^4	
a = As * fy / (0.85 * f'c *b)	0.33483 psi	
c	0.419 in	
Ase	0.22 in^2	
Icrdeflection	3.47 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	
$\rho_{provided}$ (reinforcement ratio provided)	0.0090	
a	0.32 in	

Flexure

Assumption check			
Span	Hw	Lw	
εt	0.011	0.011	
εty	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	0.807 kip-ft		
Mu	0.810 kip-ft	0.810 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	40.18%	40.18%	

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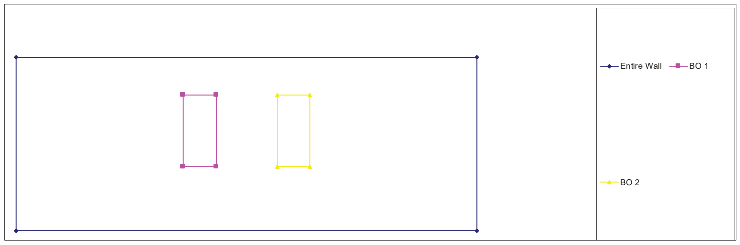

REINFORCEMENT AT OPENINGS

Loading	
Pu (factorized load from roof)	0.23 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
BO 1	5.92 ft	3 ft	1.17 ft	1.78 ft	195.05	0.09 klf	0.32 klf	0.04 kip-ft
BO 2	9.25 ft	3 ft	1.17 ft	1.78 ft	195.05	0.09 klf	0.32 klf	0.04 kip-ft

Flexure

Opening	ϕb	As req'd	Bar size	qty req'd:	**ϕMn** = ϕAsFy(db - a/2)	Check ϕMn > Mu
BO 1	0.9	0 in^2	No. 3	0	0 kip-ft	O.K.
BO 2	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	Maximum	Maximum	Shear	Moment +	Moment -	Moment +	Moment -
in Shear	R - Distance	L - Distance	kip	kip - ft	kip - ft	kip - ft	kip - ft
4	187	187	42.920	90.67	90.67	160.92	160.92

Total Tension	Base Anchors					
14.392	Dist	Tension (kip)	Shear	L - Dist	Moment +	Moment -
Base Anchor 1	9 in	***3.56***	***9.25***	187 in	0.128 kip*ft	55.399 kip*ft
Base Anchor 2	63 in	3.64	12.21	133 in	6.440 kip*ft	28.701 kip*ft
Base Anchor 3	133 in	3.64	12.21	63 in	28.701 kip*ft	6.440 kip*ft
Base Anchor 4	187 in	***3.56***	***9.25***	9 in	55.399 kip*ft	0.128 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	2	***1.531***	8.615	60.62%	W8	0	196.000	3.062	0.000	50.013
Wall Connection 2	2	***2.703***	4.242	100.00%	P1-L	58	138.000	4.242	20.503	48.783
Wall Connection 3	2	***2.703***	5.097	50.00%	W10	98	98.000	5.097	41.621	41.621
Wall Connection 4	2	***2.703***	4.242	100.00%	P1-R	138	58.000	4.242	48.783	20.503
Wall Connection 5	2	***1.531***	8.422	60.62%	W9	196	0.000	3.062	50.013	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
16841	42920	26079	867	18467	OK	4210	(26079)	OK

RIGIDITY

CALCULATED VALUES	91%	Final	11.24430344

	Pier Label	Length (inches)	Height (inches)	Fixed Top? (Y/N)	Useable? (Y/N)	Stiffness (k) (1000 kip / IN)	Deflection (in / 1000 kip)
	Entire Wall	196	97.37	Y	Y	12.400	0.081
BO 1	A'	196	40.01	Y	Y	32.211	0.031
	A	71.04	40.01	Y	Y	10.705	0.093
	B	110.92	40.01	Y	Y	17.714	0.056
BO 2	B'	196	40.01	Y	Y	32.211	0.031
	C	111	40.01	Y	Y	17.728	0.056
	D	70.96	40.01	Y	Y	10.691	0.094

	Combine Logic					
	First Segment	Second Segment	Re-Name	Combine/Subtract	Method	Combined
BO 1	Entire Wall	A'	A'a	-	Deflection	0.050
	A	B	AB	+	Stiffness	28.419
	A'a	AB	A'b	+	Deflection	0.085
BO 2	A'b	B'	B'a	-	Deflection	0.054
	C	D	CD	+	Stiffness	28.418
	B'a	CD	Final	+	Deflection	0.089

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PFS CORPORATION - Cottage Grove, WI

ID:	CORTEZ CRS-108
	DESIGN OF WALL MARKED W7

Notes	

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

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

Geometric Properties

X Corridinate	234
Y Corridinate	16
Direction of Wall	Y
Center of gravity X	234.000
Center of gravity Y	114.014
Wall Weight	4335.000 lbs.
Central wall?	Yes
Wall that supports 2 roof panels?	Yes
lop (length of opening on wall)	0 ft
H (height of wall)	97.37 in
Lh (length of wall)	16.333 ft
Analyisis will be performed as :	One-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)	0.343
Eccentricity - Axial Load	1 in
Is wall Split	No

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)	170 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)	20.89 psf	Earthquake Load (EL.lat)	17.14 psf

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

Factored Axially Applied Loads

Factored Loading per ACI	ACI 318-19 5.3.1c
Factored Pressure on Roof Wr	399.555

Axial Pressure on Section	
PuB	1.52 kip

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

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 / H^4 + L^4)	0 klf
Hw = W*(L^4 / H^4 + L^4)	0.09 klf

Unfactored Laterally Applied Loads

Unfactored Pressure on Wall uWw	58.99 psf

Lateral Pressure on Section	
Lw = W*(L^4 / H^4 + L^4)	0 klf
Hw = W*(L^4 / H^4 + L^4)	0.06 klf

Unfactored Axially Applied Loads

Unfactored Pressure on Roof uWr	259.9245 psf

Axial Pressure on Section	
PB	1.05 kip

Deflection

Service Loads		
Axial	1.05 kip	
Lateral	0 klf	
Allowed service deflection	0.27 in	
Msa	0.525 kip-in	
M	0.527 kip-in	ACI 14-9
Δs	0.002 in	ACI 14-8
Check deflection	O.K.	

Shear

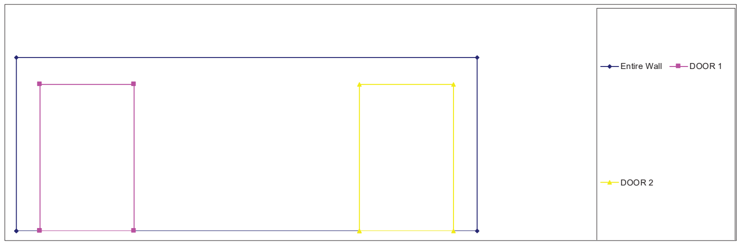
Factored Loading per ACI	ACI 318-19 5.3.1c
Vu = wuB*(Bw-2db) / 2	0 kip
ϕVc/2	1.33 kip
Check Shear	O.K.

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	
Mcr	16.971 kip-in	ACI 24.2.3.5
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	
I.cr	2.93 in^4	
a = As * fy / (0.85 * f'c *b)	0.33483 psi	
c	0.419 in	
Ase	0.22 in^2	
Icrdeflection	3.47 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	
$\rho_{provided}$ (reinforcement ratio provided)	0.0090	
a	0.32 in	

Flexure

Assumption check			
Span	Hw	Lw	
εt	0.011	0.011	
εty	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	0.803 kip-ft		
Mu	0.800 kip-ft	0.800 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	39.68%	39.68%	



REINFORCEMENT AT OPENINGS

Loading	
Pu (factorized load from roof)	0.23 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	0.83 ft	0 ft	3.34 ft	1.26 ft	1144.65	0.06 klf	0.29 klf	0.27 kip-ft
DOOR 2	12.16 ft	0 ft	3.34 ft	1.26 ft	1144.65	0.06 klf	0.29 klf	0.27 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	0.005 in^2	No. 3	1	6.69 kip-ft	O.K.
DOOR 2	0.9	0.005 in^2	No. 3	1	6.69 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	193	193	31.085	88.47	88.47	91.63	91.63

Total Tension	Base Anchors					
14.048	Dist	Tension (kip)	Shear	L - Dist	Moment +	Moment -
Base Anchor 1	3 in	***3.38***	***3.33***	193 in	0.013 kip*ft	54.410 kip*ft
Base Anchor 2	63 in	3.64	12.21	133 in	6.240 kip*ft	27.809 kip*ft
Base Anchor 3	133 in	3.64	12.21	63 in	27.809 kip*ft	6.240 kip*ft
Base Anchor 4	193 in	***3.38***	***3.33***	3 in	54.410 kip*ft	0.013 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	Overturning Moment Resistance (kip-ft) Low Right
Wall Connection 1	2	***1.531***	5.596	39.38%	W8	0	196.000	3.062	0.000	50.013
Wall Connection 2	2	***2.703***	5.097	50.00%	W10	98	98.000	5.097	41.621	41.621
Wall Connection 3	2	***1.531***	5.471	39.38%	W9	196	0.000	3.062	50.013	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
11236	31085	19849	574	12225	OK	2809	(19849)	OK

RIGIDITY

CALCULATED VALUES	60%	Final	
			7.443635058

	Pier Label	Length (inches)	Height (inches)	Fixed Top? (Y/N)	Useable? (Y/N)	Stiffness (k) (1000 kip / IN)	Deflection (in / 1000 kip)
	Entire Wall	196	97.37	Y	Y	12.400	0.081
DOOR 1	A'	196	82.25	Y	Y	15.006	0.067
	A	9.96	82.25	Y	N	0.000	0.000
	B	145.96	82.25	Y	Y	10.698	0.093
DOOR 2	B'	196	82.25	Y	Y	15.006	0.067
	C	145.92	82.25	Y	Y	10.695	0.094
	D	10	82.25	Y	N	0.000	0.000

	Combine Logic					
	First Segment	Second Segment	Re-Name	Combine/Subtract	Method	Combined
DOOR 1	Entire Wall	A'	A'a	-	Deflection	0.014
	A	B	AB	+	Stiffness	10.698
	A'a	AB	A'b	+	Deflection	0.107
DOOR 2	A'b	B'	B'a	-	Deflection	0.041
	C	D	CD	+	Stiffness	10.695
	B'a	CD	Final	+	Deflection	0.134

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	DESIGN OF WALL MARKED W8

Notes

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

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	

Geometric Properties

X Corridinate	123
Y Corridinate	14
Direction of Wall	X
Center of gravity X	178.875
Center of gravity Y	14.000
Wall Weight	3288.000 lbs.
Central wall?	Yes
Wall that supports 2 roof panels?	No
lop (length of opening on wall)	0 ft
H (height of wall)	87 in
Lh (length of wall)	9.417 ft
Analyisis 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)	0.343
Eccentricity - Axial Load	1 in
Is wall Split	No

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)	170 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)	20.89 psf	Earthquake Load (EL.lat)	17.14 psf

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

Factored Axially Applied Loads

Factored Loading per ACI	ACI 318-19 5.3.1c
Factored Pressure on Roof Wr	399.555

Axial Pressure on Section	
PuB	1.58 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	259.9245 psf

Axial Pressure on Section	
PB	1.11 kip

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)	0.07 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

Shear

Factored Loading per ACI	ACI 318-19 5.3.1c
Vu = wuB*(Bw-2db) / 2	0.06 kip
ϕVc/2	1.33 kip
Check Shear	O.K.

Deflection

Service Loads		
Axial	1.11 kip	
Lateral	0.02 klf	
Allowed service deflection	0.24 in	
Msa	2.132 kip-in	
M	2.139 kip-in	ACI 14-9
Δs	0.006 in	ACI 14-8
Check deflection	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	
Mcr	16.971 kip-in	ACI 24.2.3.5
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	
I.cr	2.93 in^4	
a = As * fy / (0.85 * f'c *b)	0.33483 psi	
c	0.419 in	
Ase	0.22 in^2	
Icrdeflection	3.47 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	
$\rho_{provided}$ (reinforcement ratio provided)	0.0090	
a	0.32 in	

Flexure

Assumption check			
Span	Hw	Lw	
εt	0.011	0.011	
εty	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	0.526 kip-ft		
Mu	0.530 kip-ft	0.530 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	26.29%	26.29%	

APPROVED: STATE OF CA - CERTIFIED DAA

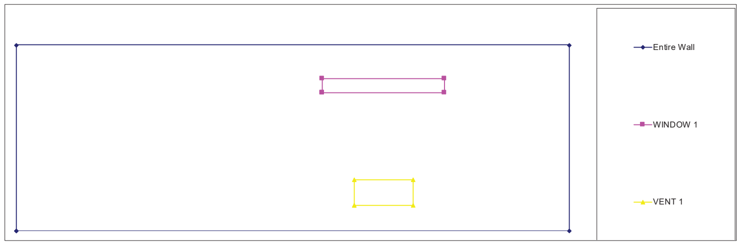
Based on the requirements of title 25 California code of regulations
Chapter 3 subchapter 2 Commercial Modular

Date: 07-20-2023 Expires: 10-31-2024

Approval # PFS: 23-006080

THIS APPROVAL DOES NOT AUTHORIZE OR APPROVE ANY OMISSION OR DEVIATION FROM THE REQUIREMENTS OF STATE LAWS OR APPLICABLE LOCAL ORDINANCES . THIS APPROVAL IS LIMITED TO FACTORY-BUILT PORTION ONLY.

PFS CORPORATION - Cottage Grove, WI



REINFORCEMENT AT OPENINGS

Loading	
Pu (factorized load from roof)	0.23 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	5.21 ft	5.38 ft	2.08 ft	1.3 ft	59.28	0.07 klf	0.3 klf	0.11 kip-ft
VENT 1	5.75 ft	1 ft	1 ft	5.25 ft	50.00	0.26 klf	0.49 klf	0.04 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	0.002 in^2	No. 3	1	6.92 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	94	98	36.627	39.55	40.74	49.12	22.90

Total Tension	Base Anchors					
10.923	Dist	Tension (kip)	Shear	L - Dist	Moment +	Moment -
Base Anchor 1	15 in	3.64	12.21	98 in	0.726 kip*ft	29.735 kip*ft
Base Anchor 2	56.5 in	3.64	12.21	56.5 in	10.304 kip*ft	9.883 kip*ft
Base Anchor 3	94 in	3.64	12.21	19 in	28.521 kip*ft	1.118 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	Overturning Moment Resistance (kip-ft) Low Right
Wall Connection 1	2	**2.703**	3.053	14.80%	W6	26	87.000	3.053	6.614	22.132
Wall Connection 2	2	**2.703**	4.596	25.00%	W7	111	2.000	4.596	42.511	0.766

Wall Shear Checks

Shear Connections at Base			Wall Shear Capacity			Required Shear Capacity (lb) per Base Connector		
Design Force (lb)	Capacity (lb)	Reserve Capacity	Design (PLF)	Resistance (PLF)	check			Reserve Capacity
12050	36627	24577	1130	19669	OK	4017	(24577)	OK

RIGIDITY

CALCULATED VALUES	97%	Final	6.983405041

	Pier Label	Length (inches)	Height (inches)	Fixed Top? (Y/N)	Useable? (Y/N)	Stiffness (k) (1000 kip / IN)	Deflection (in / 1000 kip)
	Entire Wall	113	87	Y	Y	7.230	0.138
WINDOW 1	A'	113	6.84	Y	Y	110.002	0.009
	A	62.52	6.84	Y	Y	60.694	0.016
	B	25.52	6.84	Y	Y	24.292	0.041
VENT 1	B'	113	12	Y	Y	62.543	0.016
	C	69	12	Y	Y	37.951	0.026
	D	32	12	Y	Y	16.982	0.059

	Combine Logic					
	First Segment	Second Segment	Re-Name	Combine/Subtract	Method	Combined
WINDOW 1	Entire Wall	A'	A'a	-	Deflection	0.129
	A	B	AB	+	Stiffness	84.985
	A'a	AB	A'b	+	Deflection	0.141
VENT 1	A'b	B'	B'a	-	Deflection	0.125
	C	D	CD	+	Stiffness	54.932
	B'a	CD	Final	+	Deflection	0.143

ID:	CORTEZ CRS-108
	DESIGN OF WALL MARKED W9

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*

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 Corridinate	123
Y Corridinate	214
Direction of Wall	X
Center of gravity X	185.389
Center of gravity Y	214.000
Wall Weight	2970.000 lbs.
Central wall?	Yes
Wall that supports 2 roof panels?	No
lop (length of opening on wall)	0 ft
H (height of wall)	87 in
Lh (length of wall)	9.417 ft
Analyisis 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)	0.343
Eccentricity - Axial Load	1 in
Is wall Split	No

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)	170 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)	20.89 psf	Earthquake Load (EL.lat)	17.14 psf

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

Factored Axially Applied Loads

Factored Loading per ACI	ACI 318-19 5.3.1c
Factored Pressure on Roof Wr	399.555

Axial Pressure on Section	
PuB	1.56 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	259.9245 psf

Axial Pressure on Section	
PB	1.09 kip

Shear

Factored Loading per ACI	ACI 318-19 5.3.1c
Vu = wuB*(Bw-2db) / 2	0.06 kip
ϕVc/2	1.33 kip
Check Shear	O.K.

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)	0.07 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

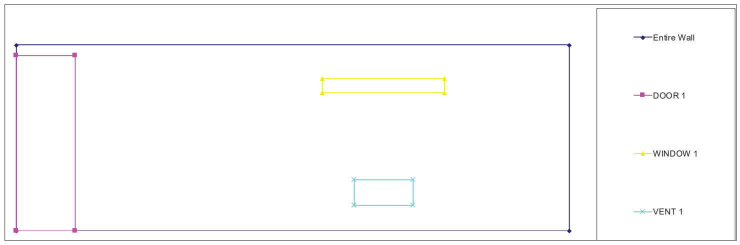
Service Loads		
Axial	1.09 kip	
Lateral	0.02 klf	
Allowed service deflection	0.24 in	
Msa	2.122 kip-in	
M	2.129 kip-in	ACI 14-9
Δs	0.006 in	ACI 14-8
Check deflection	O.K.	

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	
Mcr	16.971 kip-in	ACI 24.2.3.5
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	
I.cr	2.93 in^4	
a = As * fy / (0.85 * f'c *b)	0.33483 psi	
c	0.419 in	
Ase	0.22 in^2	
Icrdeflection	3.47 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	
$\rho_{provided}$ (reinforcement ratio provided)	0.0090	
a	0.32 in	

Flexure

Assumption check			
Span	Hw	Lw	
εt	0.011	0.011	
εty	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	0.525 kip-ft		
Mu	0.530 kip-ft	0.530 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	26.29%	26.29%	



REINFORCEMENT AT OPENINGS

Loading	
Pu (factorized load from roof)	0.23 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	0 ft	0 ft	1 ft	0.4 ft	342.50	0.02 klf	0.25 klf	0.02 kip-ft
WINDOW 1	5.21 ft	5.38 ft	2.08 ft	1.3 ft	59.28	0.07 klf	0.3 klf	0.11 kip-ft
VENT 1	5.75 ft	1 ft	1 ft	5.25 ft	50.00	0.26 klf	0.49 klf	0.04 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	0.002 in^2	No. 3	1	1.56 kip-ft	O.K.
WINDOW 1	0.9	0.002 in^2	No. 3	1	6.92 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	94	75	36.627	43.49	37.13	49.12	22.90

Total Tension	Base Anchors					
10.923	Dist	Tension (kip)	Shear	L - Dist	Moment +	Moment -
Base Anchor 1	38 in	3.64	12.21	75 in	4.661 kip*ft	22.756 kip*ft
Base Anchor 2	56.5 in	3.64	12.21	56.5 in	10.304 kip*ft	12.914 kip*ft
Base Anchor 3	94 in	3.64	12.21	19 in	28.521 kip*ft	1.460 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	Overturning Moment Resistance (kip-ft) Low Right
Wall Connection 1	2	***2.703***	3.053	14.80%	W6	26	87.000	3.053	6.614	22.132
Wall Connection 2	2	***2.703***	4.596	25.00%	W7	111	2.000	4.596	42.511	0.766

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
10571	36627	26056	987	17188	OK	3524	(26056)	OK

RIGIDITY

CALCULATED VALUES	84%	Final	6.102463809

	Pier Label	Length (inches)	Height (inches)	Fixed Top? (Y/N)	Useable? (Y/N)	Stiffness (k) (1000 kip / IN)	Deflection (in / 1000 kip)
	Entire Wall	113	87	Y	Y	7.230	0.138
DOOR 1	A'	113	82.2	Y	Y	7.790	0.128
	A	0	82.2	Y	N	0.000	0.000
	B	101	82.2	Y	Y	6.710	0.149
WINDOW 1	B'	113	6.84	Y	Y	110.002	0.009
	C	62.52	6.84	Y	Y	60.694	0.016
	D	25.52	6.84	Y	Y	24.292	0.041
VENT 1	C'	113	12	Y	Y	62.543	0.016
	E	69	12	Y	Y	37.951	0.026
	F	32	12	Y	Y	16.982	0.059

	Combine Logic					
	First Segment	Second Segment	Re-Name	Combine/Subtract	Method	Combined
DOOR 1	Entire Wall	A'	A'a	-	Deflection	0.010
	A	B	AB	+	Stiffness	6.710
	A'a	AB	A'b	+	Deflection	0.159
WINDOW 1	A'b	B'	B'a	-	Deflection	0.150
	C	D	CD	+	Stiffness	84.985
	B'a	CD	B'b	+	Deflection	0.162
VENT 1	B'b	C'	C'a	-	Deflection	0.146
	E	F	EF	+	Stiffness	54.932
	C'a	EF	Final	+	Deflection	0.164

ID:	CORTEZ CRS-108
	DESIGN OF WALL MARKED W10

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*

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 Corridinate	151
Y Corridinate	114
Direction of Wall	X
Center of gravity X	191.500
Center of gravity Y	114.000
Wall Weight	3025.000 lbs.
Central wall?	Yes
Wall that supports 2 roof panels?	Yes
lop (length of opening on wall)	0 ft
H (height of wall)	107.75 in
Lh (length of wall)	6.750 ft
Analyisis 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)	0.343
Eccentricity - Axial Load	1 in
Is wall Split	No

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)	170 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)	20.89 psf	Earthquake Load (EL.lat)	17.14 psf

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

Factored Axially Applied Loads

Factored Loading per ACI	ACI 318-19 5.3.1c
Factored Pressure on Roof Wr	399.555

Axial Pressure on Section	
PuB	1.65 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	259.9245 psf

Axial Pressure on Section	
PB	1.18 kip

Shear

Factored Loading per ACI	ACI 318-19 5.3.1c
Vu = wuB*(Bw-2db) / 2	0.11 kip
ϕVc/2	1.33 kip
Check Shear	O.K.

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)	0.07 klf
Hw = W*(H^4 / H^4 + L^4)	0.02 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)	0.04 klf
Hw = W*(H^4 / H^4 + L^4)	0.01 klf

Deflection

Service Loads		
Axial	1.18 kip	
Lateral	0.04 klf	
Allowed service deflection	0.30 in	
Msa	5.428 kip-in	
M	5.456 kip-in	ACI 14-9
Δs	0.024 in	ACI 14-8
Check deflection	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	
Mcr	16.971 kip-in	ACI 24.2.3.5
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	
I.cr	2.93 in^4	
a = As * fy / (0.85 * f`c *b)	0.33483 psi	
c	0.419 in	
Ase	0.22 in^2	
Icrdeflection	3.48 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	
$\rho_{provided}$ (reinforcement ratio provided)	0.0090	
a	0.32 in	

Flexure

Assumption check			
Span	Hw	Lw	
εt	0.011	0.011	
εty	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	0.269 kip-ft		
Mu	0.270 kip-ft	0.270 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	13.39%	13.39%	

APPROVED: STATE OF CA - CERTIFIED DAA
Based on the requirements of title 25 California code of regulations
Chapter 3 subchapter 2 Commercial Modular

Date: 07-20-2023 Expires: 10-31-2024

Approval # PFS: 23-006080

THIS APPROVAL DOES NOT AUTHORIZE OR APPROVE ANY OMISSION OR DEVIATION FROM THE REQUIREMENTS OF STATE LAWS OR APPLICABLE LOCAL ORDINANCES . THIS APPROVAL IS LIMITED TO FACTORY-BUILT PORTION ONLY.

PFS CORPORATION - Cottage Grove, WI

REINFORCEMENT AT OPENINGS

Loading	
Pu (factorized load from roof)	0.23 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:	**ϕMn** = ϕAsFy(db - a/2)	Check ϕMn > Mu

CONNECTIONS

Base Anchors			Full Resistance Value				
			Overturning				
			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
2	71	71	20.474	21.63	21.63	20.67	20.67

Total Tension	Base Anchors					
7.168	Dist	Tension (kip)	Shear	L - Dist	Moment +	Moment -
Base Anchor 1	10 in	***3.58***	***10.24***	71 in	0.421 kip*ft	21.205 kip*ft
Base Anchor 2	71 in	***3.58***	***10.24***	10 in	21.205 kip*ft	0.421 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	2	***1.531***	4.211	20.41%	W6	0	81.000	3.062	0.000	20.669
Wall Connection 2	2	***1.531***	9.192	50.00%	W7	81	0.000	3.062	20.669	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
6099	20474	14375	712	20365	OK	3050	(14375)	OK

RIGIDITY

CALCULATED VALUES	100%	Final	3.152243123

Pier Label	Length (inches)	Height (inches)	Fixed Top? (Y/N)	Useable? (Y/N)	Stiffness (k) (1000 kip / IN)	Deflection (in / 1000 kip)
Entire Wall	81	107.75	Y	Y	3.152	0.317

Combine Logic					
First Segment	Second Segment	Re-Name	Combine/Subtract	Method	Combined
Entire Wall	0	Final			3.152

ID:	CORTEZ CRS-108
	DESIGN OF WALL MARKED P1-L

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*

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 Corridinate	151	
Y Corridinate	74	
Direction of Wall	X	
Center of gravity X	164.000	
Center of gravity Y	74.000	
Wall Weight	630.000 lbs.	
Central wall?	No	
Wall that supports 2 roof panels?	No	
lop (length of opening on wall)	0 ft	
H (height of wall)	70 in	
Lh (length of wall)	2.167 ft	
Analyisis will be performed as :	One-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)	0.343	
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

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)	170 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)	20.89 psf	Earthquake Load (EL.lat)	17.14 psf

Factored Axially Applied Loads

Factored Loading per ACI	ACI 318-19 5.3.1c
Factored Pressure on Roof Wr	399.555

Axial Pressure on Section	
PuB	0.2 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	259.9245 psf

Axial Pressure on Section	
PB	0.2 kip

Shear

Factored Loading per ACI	ACI 318-19 5.3.1c
Vu = wuB*(Bw-2db) / 2	-0.07 kip
ϕVc/2	1.33 kip
Check Shear	O.K.

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)	0.09 klf
Hw = W*(H^4 / H^4 + L^4)	0 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)	0.06 klf
Hw = W*(H^4 / H^4 + L^4)	0 klf

Deflection

Service Loads		
Axial	0.20 kip	
Lateral	0.06 klf	
Allowed service deflection	0.19 in	
Msa	3.163 kip-in	
M	3.164 kip-in	ACI 14-9
Δs	0.006 in	ACI 14-8
Check deflection	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	
Mcr	16.971 kip-in	ACI 24.2.3.5
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	
I.cr	2.93 in^4	
a = As * fy / (0.85 * f'c *b)	0.33483 psi	
c	0.419 in	
Ase	0.2 in^2	
Icrdeflection	3.19 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	
$\rho_{provided}$ (reinforcement ratio provided)	0.0090	
a	0.32 in	

Flexure

Assumption check			
Span	Hw	Lw	
εt	0.011	0.011	
εty	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	0.008 kip-ft		
Mu	0.010 kip-ft	0.010 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	0.50%	0.50%	

REINFORCEMENT AT OPENINGS

Loading	
Pu (factorized load from roof)	0.23 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:	**ϕMn** = ϕAsFy(db - a/2)	Check ϕMn > Mu

CONNECTIONS

Base Anchors			Full Resistance Value				
			Overturning				
			Lateral	Base Anchors		Wall-Wall Connection	
Quantity	Maximum	Maximum	Shear	Moment +	Moment -	Moment +	Moment -
in Shear	R - Distance	L - Distance	kip	kip - ft	kip - ft	kip - ft	kip - ft
1	15	11	11.223	4.52	3.31	0.00	6.63

Total Tension	Base Anchors					
3.612	Dist	Tension (kip)	Shear	L - Dist	Moment +	Moment -
Base Anchor 1	15 in	***3.61***	***11.22***	11 in	4.515 kip*ft	3.311 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	2	***1.531***	5.158	25.00%	W6	0	26.000	3.062	0.000	6.634

Wall Shear Checks

Shear Connections at Base			Wall Shear Capacity			Required Shear Capacity (lb) per Base Connector		
Design Force (lb)	Capacity (lb)	Reserve Capacity	Design (PLF)	Resistance (PLF)	check			Reserve Capacity
270	11223	10953	0	20365	OK	270	(10953)	OK

RIGIDITY

CALCULATED VALUES	100%	Final	0

Pier Label	Length (inches)	Height (inches)	Fixed Top? (Y/N)	Useable? (Y/N)	Stiffness (k) (1000 kip / IN)	Deflection (in / 1000 kip)
Entire Wall	26	70	N	Y	0.232	4.307

Combine Logic					
First Segment	Second Segment	Re-Name	Combine/Subtract	Method	Combined
Entire Wall	0	Final			0.232

APPROVED: STATE OF CA - CERTIFIED DAA
Based on the requirements of title 25 California code of regulations
Chapter 3 subchapter 2 Commercial Modular

Date: 07-20-2023 Expires: 10-31-2024

Approval # PFS: 23-006080

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PFS CORPORATION - Cottage Grove, WI

ID:	CORTEZ CRS-108
	DESIGN OF WALL MARKED P1-R

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*

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 Corridinate	151
Y Corridinate	154
Direction of Wall	X
Center of gravity X	164.000
Center of gravity Y	154.000
Wall Weight	630.000 lbs.
Central wall?	No
Wall that supports 2 roof panels?	No
lop (length of opening on wall)	0 ft
H (height of wall)	70 in
Lh (length of wall)	2.167 ft
Analyisis will be performed as :	One-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)	0.343
Eccentricity - Axial Load	1 in
Is wall Split	No

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)	170 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)	20.89 psf	Earthquake Load (EL.lat)	17.14 psf

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

Factored Axially Applied Loads

Factored Loading per ACI	ACI 318-19 5.3.1c
Factored Pressure on Roof Wr	399.555

Axial Pressure on Section	
PuB	0.2 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	259.9245 psf

Axial Pressure on Section	
PB	0.2 kip

Shear

Factored Loading per ACI	ACI 318-19 5.3.1c
Vu = wuB*(Bw-2db) / 2	-0.07 kip
ϕVc/2	1.33 kip
Check Shear	O.K.

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)	0.09 klf
Hw = W*(H^4 / H^4 + L^4)	0 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)	0.06 klf
Hw = W*(H^4 / H^4 + L^4)	0 klf

Deflection

Service Loads		
Axial	0.20 kip	
Lateral	0.06 klf	
Allowed service deflection	0.19 in	
Msa	3.163 kip-in	
M	3.164 kip-in	ACI 14-9
Δs	0.006 in	ACI 14-8
Check deflection	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	
Mcr	16.971 kip-in	ACI 24.2.3.5
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	
I.cr	2.93 in^4	
a = As * fy / (0.85 * f'c *b)	0.33483 psi	
c	0.419 in	
Ase	0.2 in^2	
Icrdeflection	3.19 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	
$\rho_{provided}$ (reinforcement ratio provided)	0.0090	
a	0.32 in	

Flexure

Assumption check			
Span	Hw	Lw	
εt	0.011	0.011	
εty	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	0.008 kip-ft		
Mu	0.010 kip-ft	0.010 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	0.50%	0.50%	

REINFORCEMENT AT OPENINGS

Loading	
Pu (factorized load from roof)	0.23 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:	**ϕMn** = ϕAsFy(db - a/2)	Check ϕMn > Mu

CONNECTIONS

Base Anchors			Full Resistance Value / Overturning: 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
1	15	11	11.223	4.52	3.31	0.00	6.63

Total Tension	Base Anchors					
3.612	Dist	Tension (kip)	Shear	L - Dist	Moment +	Moment -
Base Anchor 1	15 in	***3.61***	***11.22***	11 in	4.515 kip*ft	3.311 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	2	***1.531***	5.158	25.00%	W6	0	26.000	3.062	0.000	6.634

Wall Shear Checks

Shear Connections at Base: Design Force (lb)	Capacity (lb)	Reserve Capacity	Wall Shear Capacity: Design (PLF)	Resistance (PLF)	check	Required Shear Capacity (lb) per Base Connector		Reserve Capacity
270	11223	10953	0	20365	OK	270	(10953)	OK

RIGIDITY

CALCULATED VALUES	100%	Final	0

Pier Label	Length (inches)	Height (inches)	Fixed Top? (Y/N)	Useable? (Y/N)	Stiffness (k) (1000 kip / IN)	Deflection (in / 1000 kip)
Entire Wall	26	70	N	Y	0.232	4.307

Combine Logic					
First Segment	Second Segment	Re-Name	Combine/Subtract	Method	Combined
Entire Wall	0	Final			0.232

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PFS CORPORATION - Cottage Grove, WI

ID: **CORTEZ CRS-108**

DESIGN OF FLOOR PANEL F1 & F2

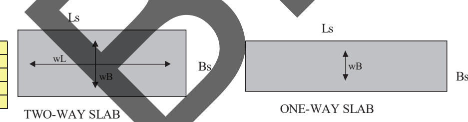
Notes:

Material Properties

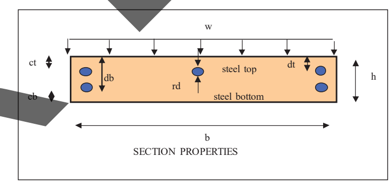
f ' c	5000 psi	
Steel Reinforcement	Plain WWF Grade 80	
Fy	80000 psi	
Lightweight?	No	
C_d (Concrete density)	150 pcf	O.K.
λ	1	*ACI 19.2.4.1(a)*
E (Steel)	29000000 psi	*ACI 20.2.2.2*
E (Concrete)	4286826 psi	*ACI 19.2.2.1(a)*
n (modular ratio)	6.76	

Geometric Properties

Ls (overall length of slab)	17 ft		
Bs (overall width of slab)	9.83 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 in		
cb (cover bottom)	1 1/2 in		
rd (assumed reinf. diameter)	0.319 in	*(if centered enter 0)*	
dt (effective depth top)	1.160 in		
db (effective depth bottom)	3.181 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)	0.343	*{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}*	



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	0.412 in	
I.cr	1.04 in^4	
a	0.32 in	#DIV/0!
c		



(reinforcement ratio provided)		ω
$\rho_{provided}$	0.0053	0.0842
$\rho_{provided}$	0.0154	0.2469
$\rho_{provided}$	0.0044	0.0697
$\rho_{provided}$	0.0118	0.1893

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*

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)	21.43 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	0.06 klf	0.21 klf

3.280 — 0.10, 0.10
2.43 ft — 0.26, 0.26 kip

B (Span in the short direction)	3.280 ft
L (Span in the long direction)	2.43 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	0.107 klf	0.355 klf

3.280 — 0.18, 0.18
2.43 ft — 0.43, 0.43

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	0.15 klf	0.51 klf

3.280 ft — 0.25, 0.25
2.43 ft — 0.62, 0.62

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

APPROVED: STATE OF CA - CERTIFIED DAA

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Chapter 3 subchapter 2 Commercial Modular

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PFS CORPORATION - Cottage Grove, WI

ID: **CORTEZ CRS-108**

DESIGN OF FLOOR PANEL F1 & F2

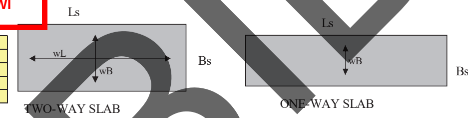
Notes:

Material Properties

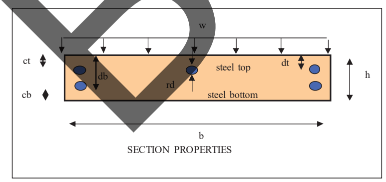
f ' c	5000 psi	
Steel Reinforcement	Plain WWF Grade 80	
Fy	80000 psi	
Lightweight?	No	
C_d (Concrete density)	150 pcf	O.K.
λ	1	*ACI 19.2.4.1(a)*
E (Steel)	29000000 psi	*ACI 20.2.2.2*
E (Concrete)	4286826 psi	*ACI 19.2.2.1(a)*
n (modular ratio)	6.76	

Geometric Properties

Ls (overall length of slab)	17 ft		
Bs (overall width of slab)	9.83 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 in		
cb (cover bottom)	1 1/2 in		
rd (assumed reinf. diameter)	0.319 in	*(if centered enter 0)*	
dt (effective depth top)	1.160 in		
db (effective depth bottom)	3.181 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)	0.343	*{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}*	



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	0.412 in	
I.cr	1.04 in^4	
a	0.32 in	#DIV/0!
c		



(reinforcement ratio provided)		ω
$\rho_{provided}$	0.0053	0.0842
$\rho_{provided}$	0.0154	0.2469
$\rho_{provided}$	0.0044	0.0697
$\rho_{provided}$	0.0118	0.1893

Flexure

Flexural Moments for Bs	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 = ϕf'cbd^2w(1-0.59w)	ΔM = Mu - ϕMn	ϕMn =	Check ϕMn > Mu	% allowed
** Mpos (positive Moment) = (wB*B^2)*0.08	0.05 kip-ft	0.021	0.003	Tension	0.9	3.64 kip-ft		3.64 kip-ft	O.K.	1.42%
** Mneg (negative Moment) = (wB*B^2)*0.1	0.06 kip-ft	0.021	0.003	Tension	0.9	4.44 kip-ft		4.44 kip-ft	O.K.	1.45%

***continuous beam moment coefficients used*

Flexural Moments for Ls	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 = ϕf'cbd^2w(1-0.59w)	ΔM = Mu - ϕMn	ϕMn =	Check ϕMn > Mu	% allowed
** Mpos (positive Moment) = (wL*L^2)*0.078	0.10 kip-ft	0.021	0.003	Tension	0.9	3.64 kip-ft		3.64 kip-ft	O.K.	2.66%
** Mneg (negative Moment) = (wB*B^2)*0.106	0.04 kip-ft	0.021	0.003	Tension	0.9	4.44 kip-ft		4.44 kip-ft	O.K.	0.85%

***continuous beam moment coefficients used*

	Mu	ε_t	ε_{ty} 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	0.006	0.003	Transition	0.6	50.000 in^3	1.473 kip-ft	17.708 kip-ft	10.625 kip-ft	O.K.	0.00%
Moh2 (Moment at oh2) = 0	0.00 kip-ft	0.006	0.003	Transition	0.6	50.000 in^3	1.473 kip-ft	17.708 kip-ft	10.625 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	0.12 kip	0.85	5.40 kip	4.59 kip	O.K.	2.57%
** Voh1 = 0	0.00 kip	0.85	1.97 kip	1.67 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	0.52 kip	0.85	5.40 kip	4.59 kip	O.K.	11.39%
** Voh2 = 0	0.00 kip	0.85	1.97 kip	1.67 kip	O.K.	0.00%

***continuous beam shear coefficients used*

	Months	Epsilon
Sustained Load Duration Per Table 24.2.4.1.3	6	1.2

Span type:	K
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	0.05 kip-ft	0.14 kip-ft	125 in^4	125 in^4	0.001 in	0.0053	0.9500	0.000 in	0.001 in	0.1093 in	0.0820 in	O.K.	O.K.	0.48%	0.60%
L	0.10 kip-ft	0.26 kip-ft	125 in^4	125 in^4	0.001 in	0.0053	0.9500	0.000 in	0.001 in	0.0810 in	0.0608 in	O.K.	O.K.	0.64%	0.81%

ID: **CORTEZ CRS-108**

Geometric properties	
Bs (width of roof panel)	19.00 ft
Ls (Length of roof panel)	20.50 ft
Ar Area of Roof	389.50 ft^2
H (height of building)	9.44 ft
Lb (length of building)	18.83 ft
Wb (width of building)	17 ft
Ab (Area of building)	320.11 ft^2
Nv (quantity of vaults)	0
Avl (Area of Vault Lips)	0.00 ft^2
Av (Area of Vault)	0.00 ft^2
Vh (Vault height)	0 ft
Cab (Closed Area of building)	308.33 ft^2
Hw (depth of floodwater)	1 ft

Loading	
Wv (weight of vault)**	0 lb
Wtr (roof panel weight)	24976 lb
Ww (total walls panel weight)	41095 lb
Fw (floor panel weight)	20422 lb
We (estimated weight of building)	86493 lb
Wev (estimated weight of building w/ vault)	86493 lb
PSFr (roof snow load)	142.8 psf
PSFf (Floor Live Load)	400 psf
Pmax (Maximum allowable pressure)	1500 psf
Fupmw (MWFRS Uplift Force)	45.16 psf
WLlat (MWFRS lateral wind pressure)	51.74 psf
γw (specific weight of water)	62.4 pcf

**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)	23424.2 lb
	.7*Vseismic (from seismic analysis without snow)	20754.9 lb
	Vwind = WLlat * max(Wb,Lb)*H	9197.5 lb

* Load adjustment per IBC 1605.3 load combinations.

Sliding Resistance with Snow	Pslide = u*(.6*We+.75*PSFr*Ar)	Pslide =	37444.5 lb

					Fsreqd	
Factor of Safety	FSwind = Pslide / Vwind	FSwind =	4.1	≥	1.0	O.K.
	FSseismic = Pslide / Vseismic	Fseismic =	1.6	≥	1.0	O.K.

Sliding Resistance with No Snow	Pslide = u*.6*We	Pslide =	20758.32 lb

					Fsreqd	
Factor of Safety	FSwind = Pslide / Vwind	Fswind =	2.3	≥	1.0	O.K.
	FSseismic = Pslide / Vseismic	Fseismic =	1.0	≥	1.0	O.K.

CHECK OVERTURNING RESISTANCE

Shear	.7*Otseismic (from seismic analysis with snow)	196.971 kip-ft
	.7*Otseismic (from seismic analysis without snow)	173.808 kip-ft
	Otwind = (WLlat*Lb*H^2 / 2) + (Fupmw*Lb*Wb^2 / 2)	166.303 kip-ft

* Load adjustment per IBC 1605.3 load combinations.

Overturning Resistance with Snow	Otrsnow = (.6*We+.75*PSFr*Ar)*(Wb/2)	Otrsnow =	449.708 kip-ft

					Fsreqd	
Factor of Safety	FSwind = Otrsnow / Otwind	FSwind =	2.70	≥	1.0	O.K.
	FSseismic = Otrsnow / Vseismic	Fseismic =	2.28	≥	1.0	O.K.

Overturning Resistance with No Snow	Otr = .6*We*Wb/2	Otr	441.114 kip-ft

					Fsreqd	
Factor of Safety	FSwind = Otr / Vwind	Fswind =	2.65	≥	1.0	O.K.
	FSseismic = Otr / Vseismic	Fseismic =	2.54	≥	1.0	O.K.

CHECK BEARING PRESSURE CONDITION

Net Pressure	Pnet = (Wev + PSFr*Ar + PSFf*Af) / Ab	843.95 psf

Allowable	Pmax ≥ Pnet	1500 psf ≥ 843.95 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 =**	19240.00 lb

Factor of Safety	FSb = We / Fb	**FSb =**	4.50	≥	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.

APPROVED: STATE OF CA - CERTIFIED DAA
Based on the requirements of title 25 California code of regulations
Chapter 3 subchapter 2 Commercial Modular

Date: 07-20-2023 Expires: 10-31-2024

Approval # PFS: 23-006080

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PFS CORPORATION - Cottage Grove, WI