DESIGN CRITERIA

building code	2018 International Building Code (as modified by NRS 71-6403)
county / state	Turner County / South Dakota
risk category	I I

ROOF LOADS

roof live load	20 psf
roof snow load	
ground snow load	pg = 40 psf
exposure factor	Ce = 1.0
thermal factor	Ct = 1.0
importance factor	Is = 1.0
rain on snow surcharge	pr = 0 psf
minimum code snow load	pmin = 20 psf
flat roof snow load	pf = 28 psf
sloped roof snow load	ps = 28 psf
	plus drifts as applicable
roof dead load	
roofing & insulation	5 psf
trusses	5 psf
ceiling, lights & mechanical	10 psf
total to trusses	15 psf
	plus weight of equipment where indicated
	& non-concurrent bottom-chord live load as req'd

WIND LOAD DATA

basic wind speed (3 second gust)	90 mph service (Iw = 1.00) / 113 mph ultimate
wind exposure category	C
enclosed building	GCpi = + / - 0.18

EARTHQUAKE LOAD DATA

seismic site class (assumed)	D
mapped short period spectral response acceleration	Ss = 0.106
mapped 1 second spectral response acceleration	S1 = 0.035
design short period spectral response acceleration	Sds = 0.113
design 1 second period spectral response acceleration	Sd1 =0.056
seismic design category	A
seismic importance factor	Ie = 1.00
basic structural system	bearing wall system
seismic force resisting system	A8 intermediate precast shear walls
seismic response factor	R=4.0
method of analysis	equivalent lateral force procedure
seismic coefficient	Cs = 0.032

MATERIAL STRENGTHS USED IN DESIGN

(for reference in calculations - see specifications or notes for actual material specifications)

concrete:		
footings	28 day f'c = 3,000	psi
other structural concrete	28 day f'c = 4,000	psi
reinforcing bars (ASTM A 615 or A 706 grade 60)	fy = 60,000	psi
welded wire fabric (ASTM A 185)	fy = 65,000	psi
structural steel sections W and WT (ASTM A 992)	fy = 50,000	psi
structural steel sections C, L, M, S, HP, MT and ST (ASTM A 36)	fy = 36,000	psi
structural steel plates bars, and rods u.n.o. (ASTM A 36)	fy = 36,000	psi
structural steel sections HSS (ASTM A 500 grade B)	fy = 46,000	psi
high-strength structural bolts (ASTM A 325)	fu = 120,000	psi
soil allowable bearing pressure for foundations	qa = 2,500	psf

GENERAL

1. These drawings are ONLY for engineering of the precast wall panels and the foundations supporting them. Design of the main building, including acting as the coordinating professional, is not part of the scope of services included in this design / these drawings. Please contact the building owner for information regarding the overall design of the building.
2. The requirements of these general notes apply unless otherwise noted on plans.
3. All dimensions of existing conditions shall be verified prior to commencing work. Discrepancies between existing conditions or between the drawings and specifications shall be communicated to the constructor, owner, architect and structural engineer as soon as practicable after they are discovered.
4. This opverall structure shall be designed to be stable and self-supporting when fully completed. Stability of the structure during construction is the responsibility of the contractor. All necessary temporary bracing required to stabilize and support the structure during all construction phases shall be furnished and installed by the constructor. If required, temporary bracing shall be designed by a separate licensed engineer employed by the constructor.
   The framing designed by others is part of the overall lateral stability of the completed structure. Therefore, until the framing, bridging, sheathing/deck and precast elements are all installed and completely fastened together, any or all of the structural elements may require temporary bracing. The responsibility for the design, installation and ultimately the adequacy of the temporary bracing lies solely with the constructor.
5. Construction loads imposed on the structural framing shall not exceed the design capacity of the framing at the time such loads are imposed.
6. Non-structural elements of the building (architectural finishes, masonry veneer and associated ties, insulation, sheathing, ductwork, piping, etc.) are generally not shown on these structural drawings. Certain non-structural elements that are shown on the structural drawings are shown for reference only. Non-structural elements shall be constructed as shown on the architectural and trade drawings.
7. Any material ordered or work performed prior to the engineer's review and approval of the shop drawings is at the constructor's sole risk.

PRECAST CONCRETE

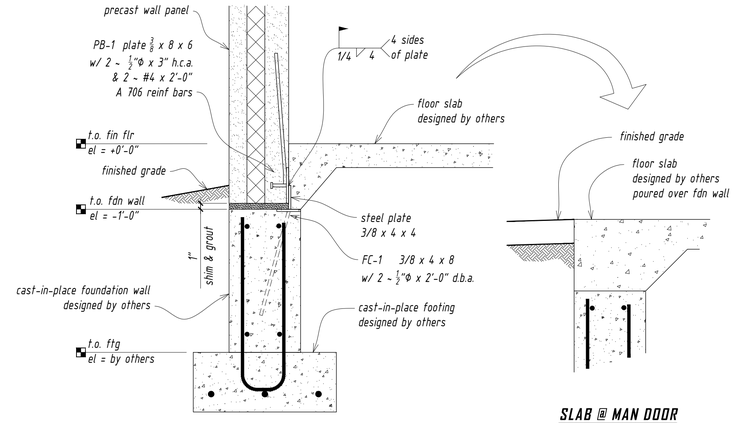
1. All precast concrete design and construction shall be performed in accordance with PCI MNL-120, "PCI Design Handbook", ACI 318 and PCI MNL-117.
2. Supports to adequately position reinforcing bars strand and wire mesh during manufacture shall be properly installed.
3. Plastic chairs shall be used in all precast concrete that will be exposed to view in the completed structure.
4. Pipe sleeves and inserts shall be installed in precast concrete work where required.
5. Precast components shall be adequately supported during all phases of erection including shipping, storage and tilting and lifting.
6. Precast components shall be clearly marked so they can be accurately erected using the erection drawings.
7. The location of field-installed anchors shall be verified prior to erection so that adjustments can be made before the precast components are being set.
8. Precast concrete members shall be lifted, handled, erected and supported so as to not damage or overstress the members or the partially erected structure.

STRUCTURAL STEEL

1. Detailing, fabrication, and erection of structural steel shall conform to the AISC "Specification for Structural Steel", (ANSI / AISC 360-10), AISC "Code of Standard Practice for Structural Steel Buildings and Bridges", AISC / RCSC "Specification for Structural Joints Using ASTM A 325 or A 490 Bolts" and AWS D1.1 "Structural Welding Code."
2. Structural steel members shall conform to the following specifications:

member type	specification
wide flange	ASTM A 992
standard beam	ASTM A 36
channel	ASTM A 36
angle	ASTM A 36
plate	ASTM A 36
bar and rod	ASTM A 36
rectangular, square & round tube (hss)	ASTM A 500 gr B
pipe	ASTM A 53 gr B
threaded rod	ASTM A 36
anchor rod	ASTM F 1554 gr 36
common bolts	ASTM A 307 gr A
high strength bolts (twist off)	ASTM A 1582
high strength bolts (snug tight)	ASTM A 325
direct tension indicating washers	ASTM F 959
hardened washers	ASTM F 436
nuts	ASTM A 563
shear connectors (studs)	ASTM A 108
welding electrode	AWS D1.1 E70xx
	(except as otherwise required)

3. Grout shall be non-metallic, non-corrosive, non-shrink, non-staining conforming to ASTM C 1107 with a 28 day compressive strength of 5,000 psi.
4. The typical details on the drawings contain additional general steel construction notes and details.
5. High-strength bolted connections shall be fully pretensioned unless noted as snug tight on the drawings.
6. Hardened washers shall be installed under all nuts for fully pretensioned bolts.
7. Hardened washers shall be installed over all oversized holes, standard slots and short slotted holes. Plate washers 5/16" thick shall be welded over large holes and long slots.
8. Bolted joints where relative movement is allowed shall have jam nuts to prevent unthreading.
9. Do not re-use previously tensioned high-strength bolts.
12. Flame cut edges shall not be permitted on completed pieces.
13. Ends of pieces loaded in bearing shall be milled flat and square.
14. All shop and field welding shall be done by a certified welder using qualified welding procedures.
15. All steel surfaces shall be prepared according to SSPC SP-3, "Power Tool Cleaning" unless noted or required otherwise.
16. Fabricator's standard corrosion-inhibiting primer shall be applied to a minimum of 1.5 mils d.f.t. to all structural steel except surfaces to be field welded and surfaces embedded in more than 2" of concrete or mortar.
17. Painting of structural steel shall be in accordance with the painting specifications and/or finish schedule - see architect's drawings. Confirm structural steel finishes with architect.
18. Steel exposed to view shall be fabricated with surfaces that are true, smooth and free of blemishes in accordance with industry standards. Copes and cuts shall be true, square and properly radiused as indicated on the shop detail drawings.
19. Hot-dipped galvanizing of structural steel shall conform to ASTM A 123, A 153 or A 385 as appropriate where galvanizing is indicated on the plans.
20. Mastic coating for steel shall be Wohl BB-110 or approved equal applied to a dry film thickness of at least 10 mils where indicated on drawings.

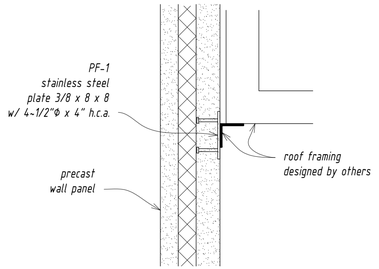


SLAB @ MAN DOOR

Note: Provide foundation insulation as req'd.

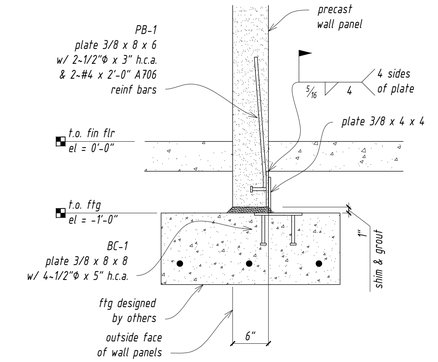
TYP EXT PANEL to FTG CON

scale: 1" = 1'-0"



TYP PANEL TO FRAMING CONNECTION

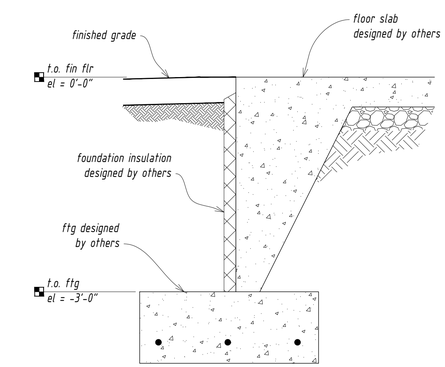
scale: 1" = 1'-0"



TYP INT PANEL to FTG CONN

scale: 1" = 1'-0"

NOTE!
All wall panels must be braced to roof structure near top of panel panels are not free-standing



TYP @ OVHD DOOR OPNG

scale: 1" = 1'-0"

OLA PRECAST
35271 270th St
Platte, SD 57369
(605) 726-3141

Matthew W Craig, PE
306 W Main St Ste 410
Frankfort, KY 40601
m.w.craig@outlook.com
(859) 351-9169

project # M22-0010

GENERAL NOTES & TYPICAL DETAILS

BROADWAY WASH & SHINE
MARION, SOUTH DAKOTA

Drawing Issue Log

C	9-14-2022	issued for approval - revised
B	9-12-2022	issued for approval - revised
A	9-7-2022	issued for approval

REGISTERED PROFESSIONAL ENGINEER
REG. NO. 13074
MATTHEW W. CRAIG
SOUTH DAKOTA

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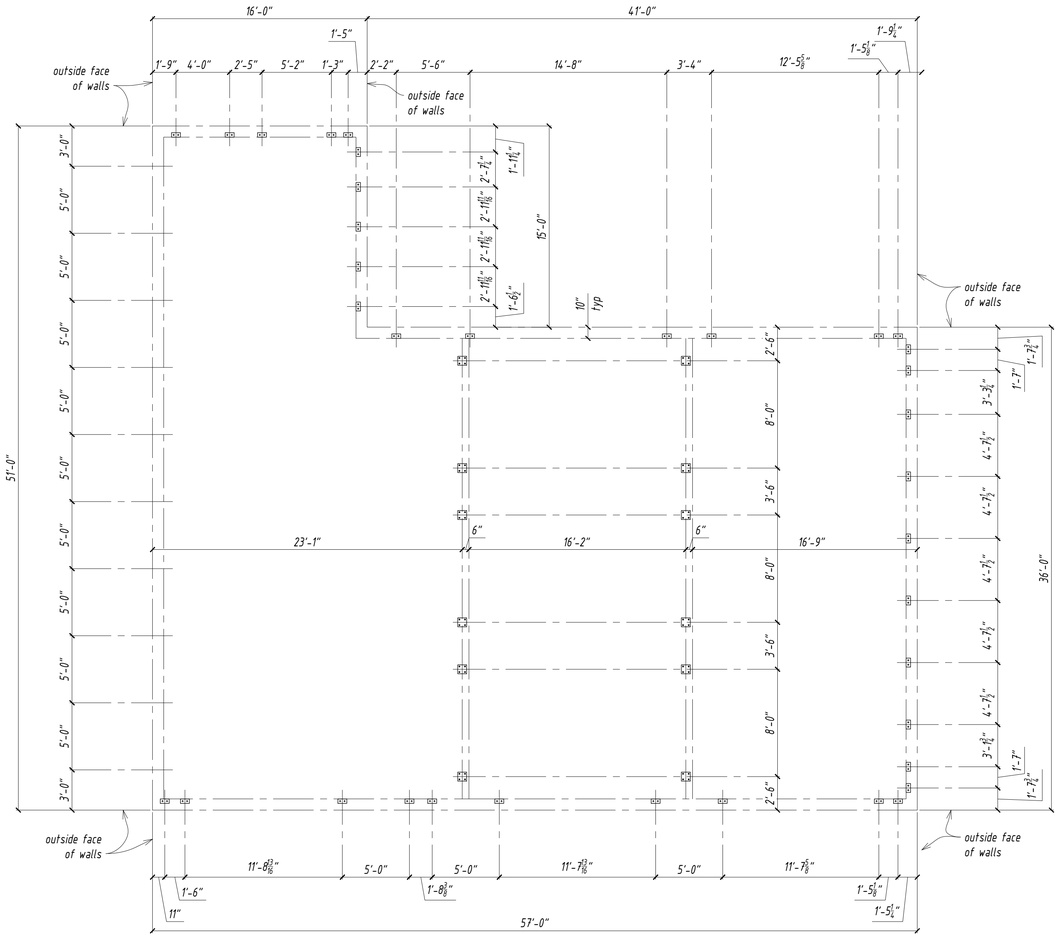
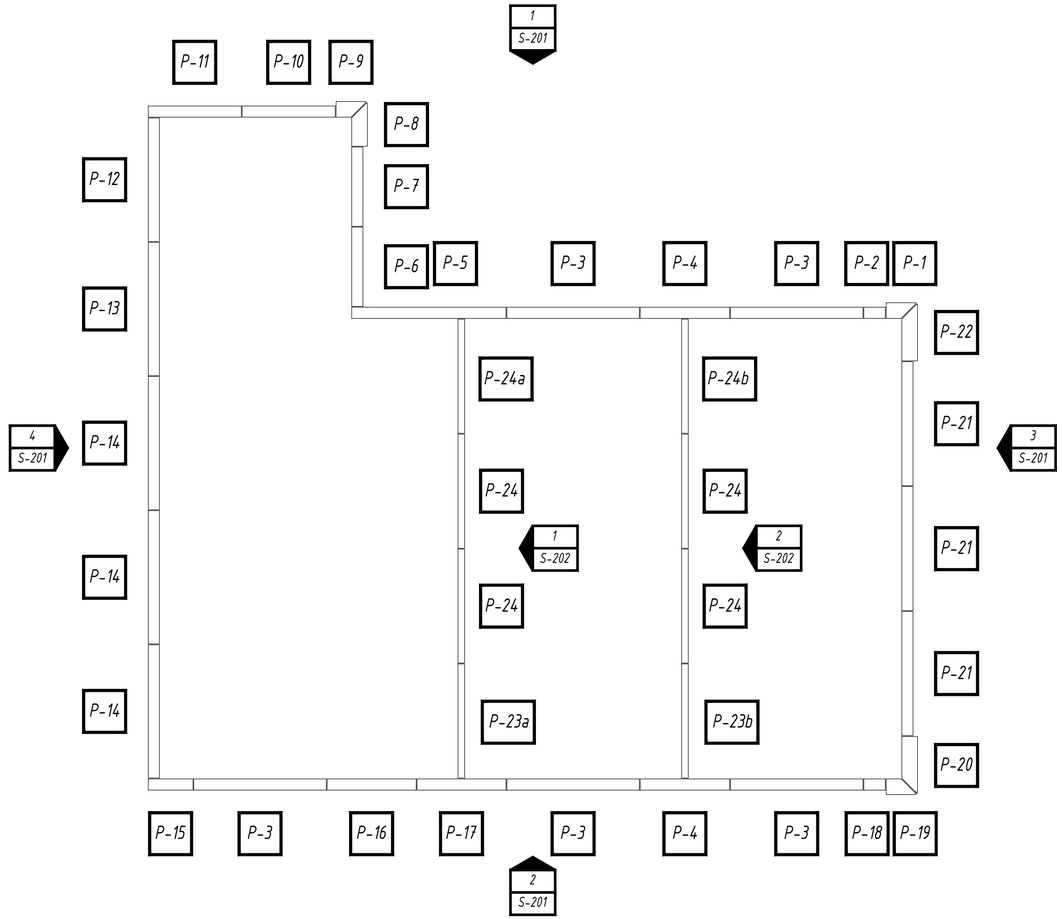
contract date:	Sept 2022
drawn:	LN
designed:	MWC
scale:	as noted

S-001



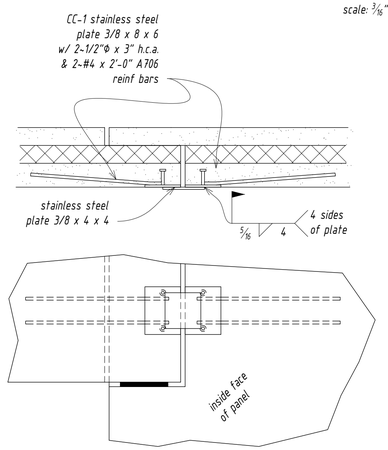
FOUNDATION CONNECTION PLAN

scale: 3/16" = 1'-0"



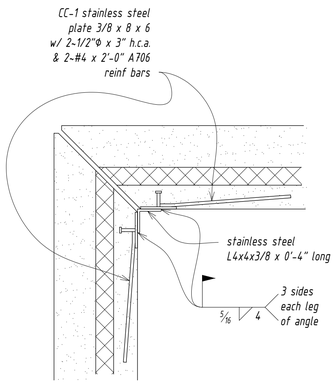
PANEL PLAN

scale: 3/16" = 1'-0"



TYP SPANDREL LEDGE CONN

scale: 1" = 1'-0"



TYP BEVELED CORNER CONN

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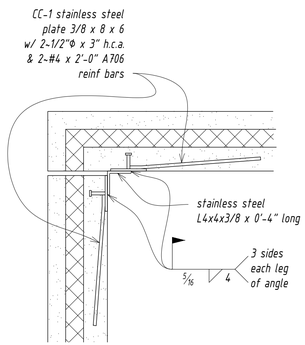
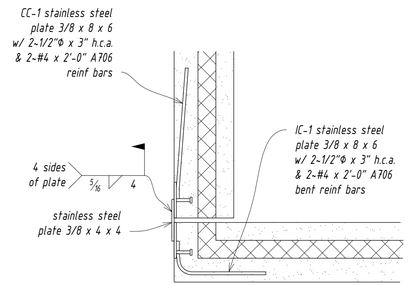


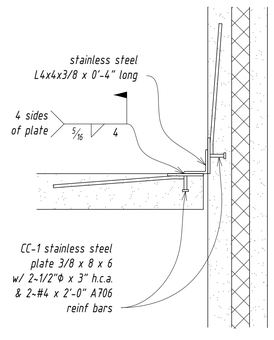
TYP OUTSIDE CORNER CONN

scale: 1" = 1'-0"



TYP INSIDE CORNER CONN

scale: 1" = 1'-0"



TYP INSIDE TEE CONN

scale: 1" = 1'-0"

OLA PRECAST
35271 270th St
Platte, SD 57369
(605) 726-3141

Matthew W Craig, PE
306 W Main St Ste 410
Frankfort, KY 40601
m.w.craig@outlook.com
(859) 351-9169

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PANEL PLAN & TYPICAL DETAILS

BROADWAY WASH & SHINE

MARION, SOUTH DAKOTA

Drawing issue Log

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REGISTERED PROFESSIONAL ENGINEER
13074
MATTHEW W CRAIG
SOUTH DAKOTA
9-14-22

ISSUED FOR APPROVAL
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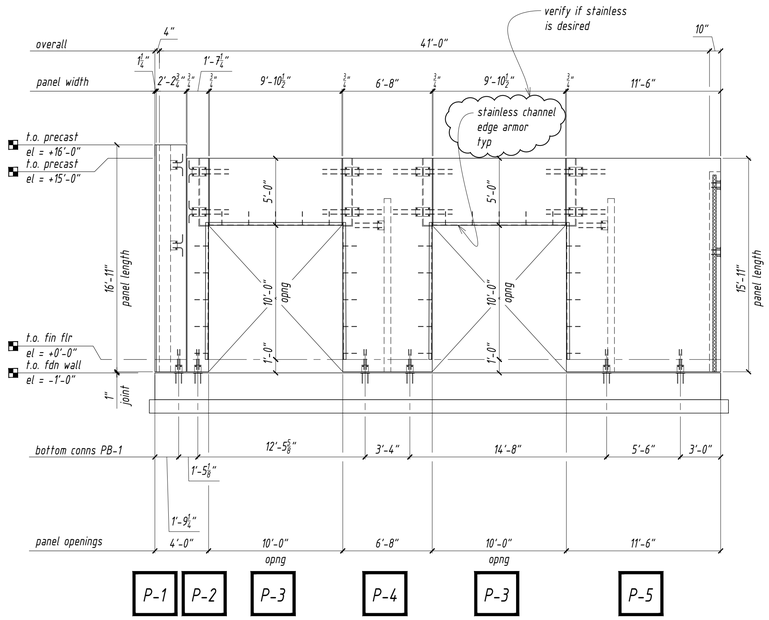
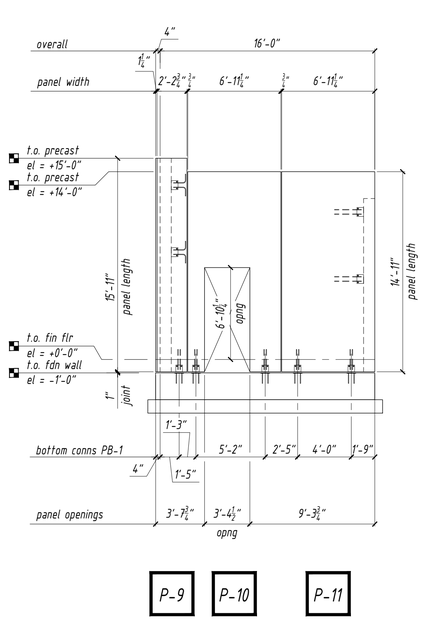
contract date:	Sept 2022
drawn:	LN
designed:	MWC
scale:	as noted

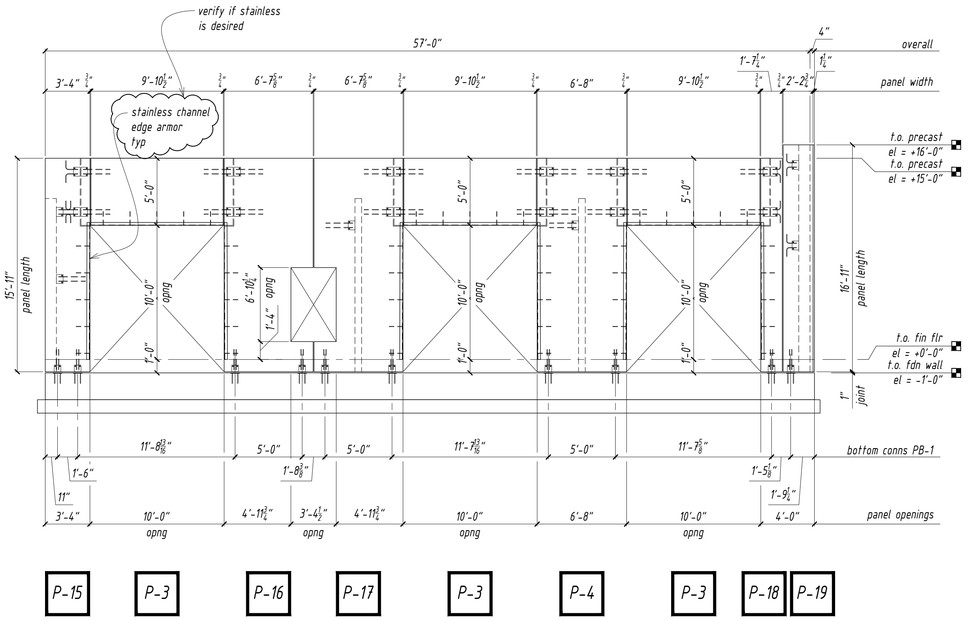
S-102



1 NORTH ELEVATION

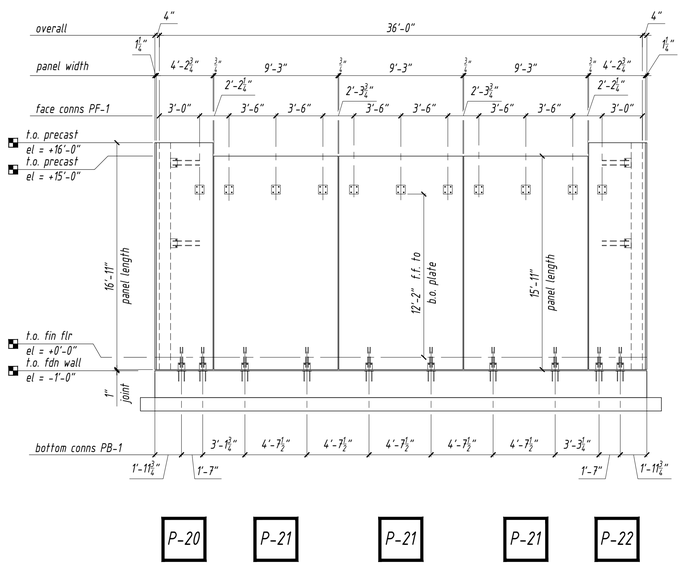
scale: 3/16" = 1'-0"





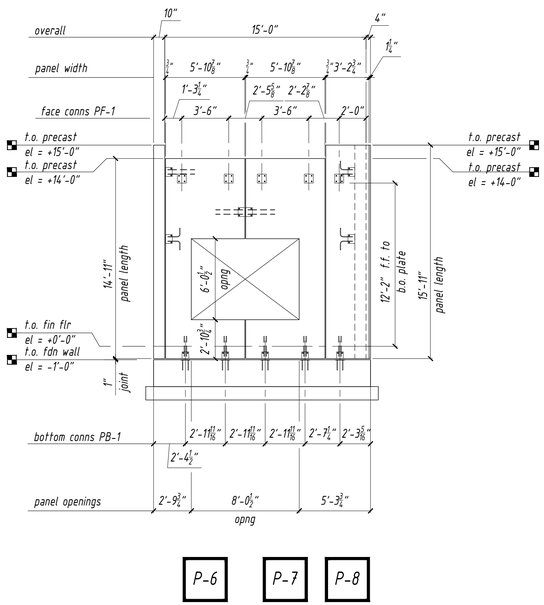
2 SOUTH ELEVATION

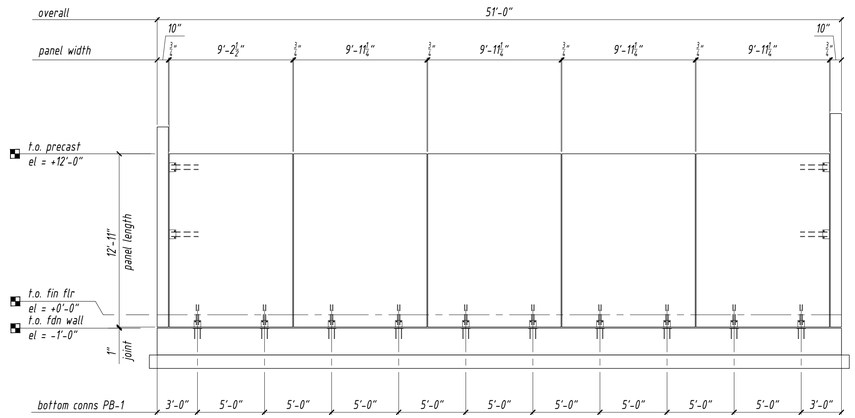
scale: 3/16" = 1'-0"



3 EAST ELEVATION

scale: 3/16" = 1'-0"





4 WEST ELEVATION

scale: 3/16" = 1'-0"

OLA PRECAST
35271 270th St
Platte, SD 57369
(605) 726-3141

Matthew W Craig, PE
306 W Main St Ste 410
Frankfort, KY 40601
m.w.craig@outlook.com
(859) 351-9169

project # M22-0010

WALL PANEL ELEVATIONS

BROADWAY WASH & SHINE
MARION, SOUTH DAKOTA

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REGISTERED PROFESSIONAL ENGINEER
13074
MATTHEW W. CRAIG
SOUTH DAKOTA
9-14-22

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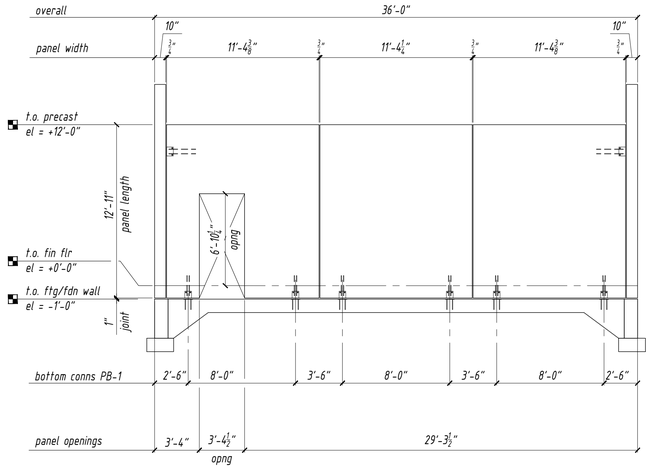
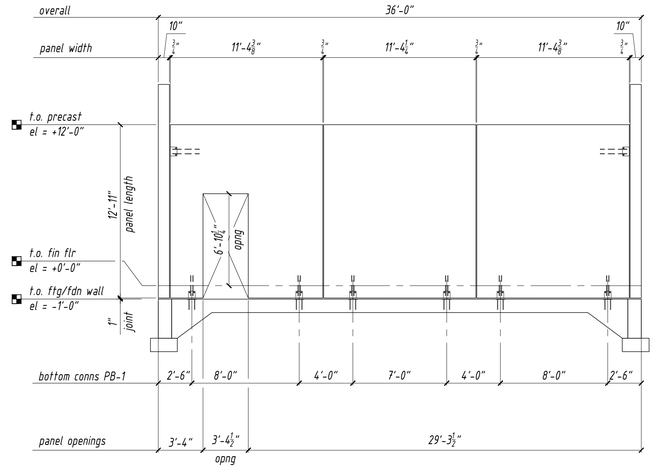


P-23a | P-24 | P-24 | P-24a

1 ELEVATION (EAST INTERIOR WALL)

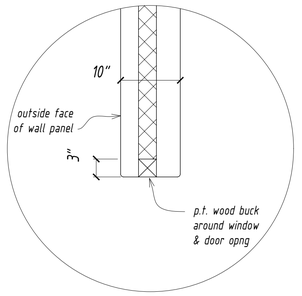
scale: 3/16" = 1'-0"



P-23b | P-24 | P-24 | P-24b

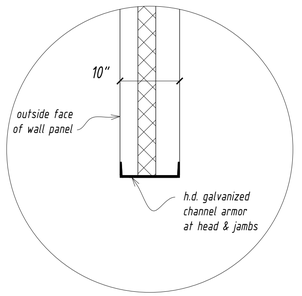
2 ELEVATION (WEST INTERIOR WALL)

scale: 3/16" = 1'-0"



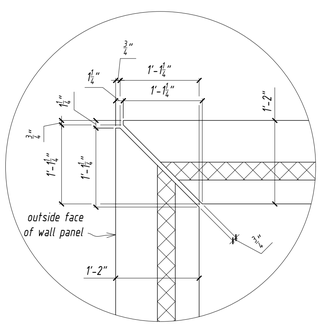
TYP DOOR/WINDOW BUCK

not to scale



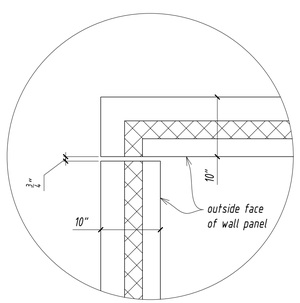
TYP OHD DOOR HEAD/JAMB

not to scale



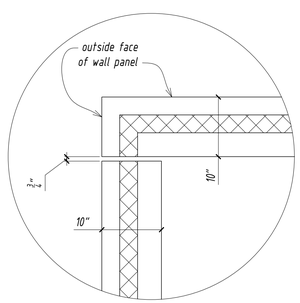
TYP BEVEL CORNER

scale: 1" = 1'-0"



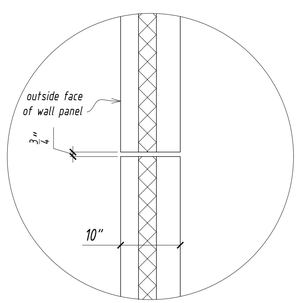
TYP BUTT CORNER (INSIDE)

scale: 1" = 1'-0"



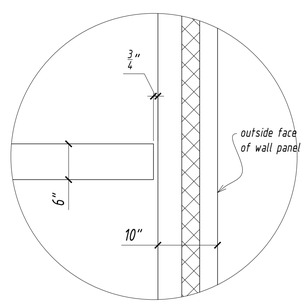
TYP BUTT CORNER (OUTSIDE)

scale: 1" = 1'-0"



TYP PANEL JOINT

not to scale



TYP TEE JOINT

not to scale

OLA PRECAST
35271 270th St
Platte, SD 57369
(605) 726-3141

Matthew W Craig, PE
306 W Main St Ste 410
Frankfort, KY 40601
m.w.craig@outlook.com
(859) 351-9169

project # M22-0010

WALL PANEL ELEVATIONS & DETAILS

BROADWAY WASH & SHINE
MARION, SOUTH DAKOTA

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REGISTERED PROFESSIONAL ENGINEER
REG. NO. 13074
MATTHEW W. CRAIG
SOUTH DAKOTA
9-14-22

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scale:	as noted

S-202