Interim Field Guide for Construction and Testing of Concrete Shear Wall with Added FRP Layer

Abstract

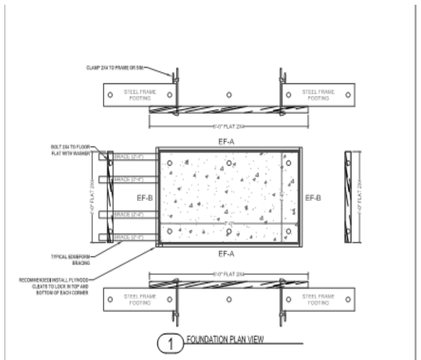
In Los Angeles, many of the hospitals are no longer up to code as they were built in the 1970's. The sheer walls that the hospitals were constructed on stand to experience major failures in the event of a seismic event and this is the issue that this student research team was assigned with. This project was to design, procure, and construct all necessary constraints to be able to test a wall that is fundamentally similar to that of the sheer walls in these hospitals. Once this was complete the goal was to test two walls with an added FRP wrap and see if this provided an adequate solution to bring the walls up to code in a cost and time effective way. This paper details the steps, construction and procurement wise, so that another research team may take this project to the next level. The extent this paper reaches is that of the wall concrete pour in which a form blowout was experienced that left the team with a wall but no longer the means or funds to do anymore work.

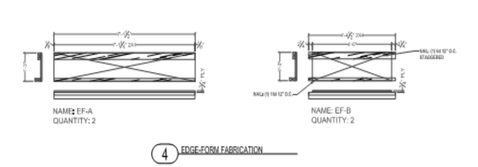
Project Deliverables

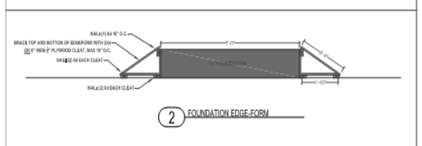
Design of Wall & Foundation
Establish Relations w/ Local Subs
Estimating and QTO
Procurement of Materials
Phasing/Scheduling Project
Construction of Wall & Foundation
Managing a Team

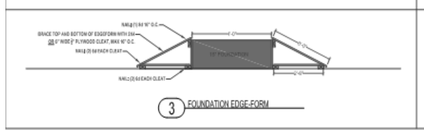
Key Words

Concrete, Shear, Wall, Fiber, Reinforced, Polymer, Construction, Field, Guide









GENERAL NOTES:
1. FORMS ARE **NOT** DESIGNED FOR FULL LIQUID HEAD. LIMIT CONCRETE POUR RATE TO 4 VERTICAL FEET PER HOUR.
2. ALL LUMBER STUDS IN PANELS ARE DESIGNED AS 2X4 OF #2 OR BETTER
3. ALL PLYWOOD IS ¾" MDO PLYFORM OR SIM.

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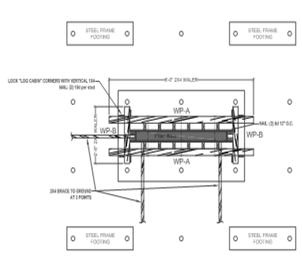

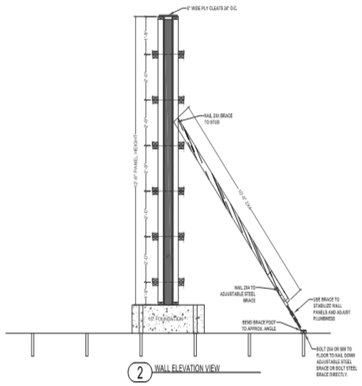

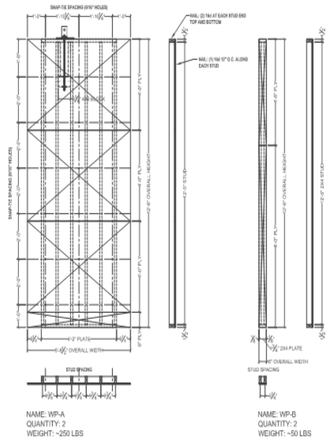

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W-2

CAL POLY
SAN LUIS OBISPO

USE:

DESCRIPTION: 6.00 sks/yd^3 Total Cementitious 3/8" Maximum Aggregate Size
6" ± 1" Slump 3500 PSI @ 28 days
W/CM = 0.53
gal/sack = 6.00

MATERIALS		PERCENT USED	SPECIFIC GRAVITY	ABSOLUTE VOLUME, ft^3	SSD WTS. lbs/yd^3
CEMENT - TYPE I/II/V LOW ALKALI		82%	3.15	2.350	462
POZZOLAN - CLASS F: REPLACEMENT FOR CEMENT @		18%	2.20	0.743	102
WATER	36.0 gal.	--	1.00	4.808	300
AIR	ENTRAPPED	1.5%	--	0.405	--
GAREY HMS GRAVEL	3/8" x #8	52.7%	2.62	9.787	1600
GAREY	C 33 SAND	47.3%	2.58	8.907	1434
			TOTALS	27.000	3898

MIRA 62 @ 8.0 oz/cwt **45.1 oz/cy**

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