

Belize Service Learning: A Case Study in Construction Technology Abroad

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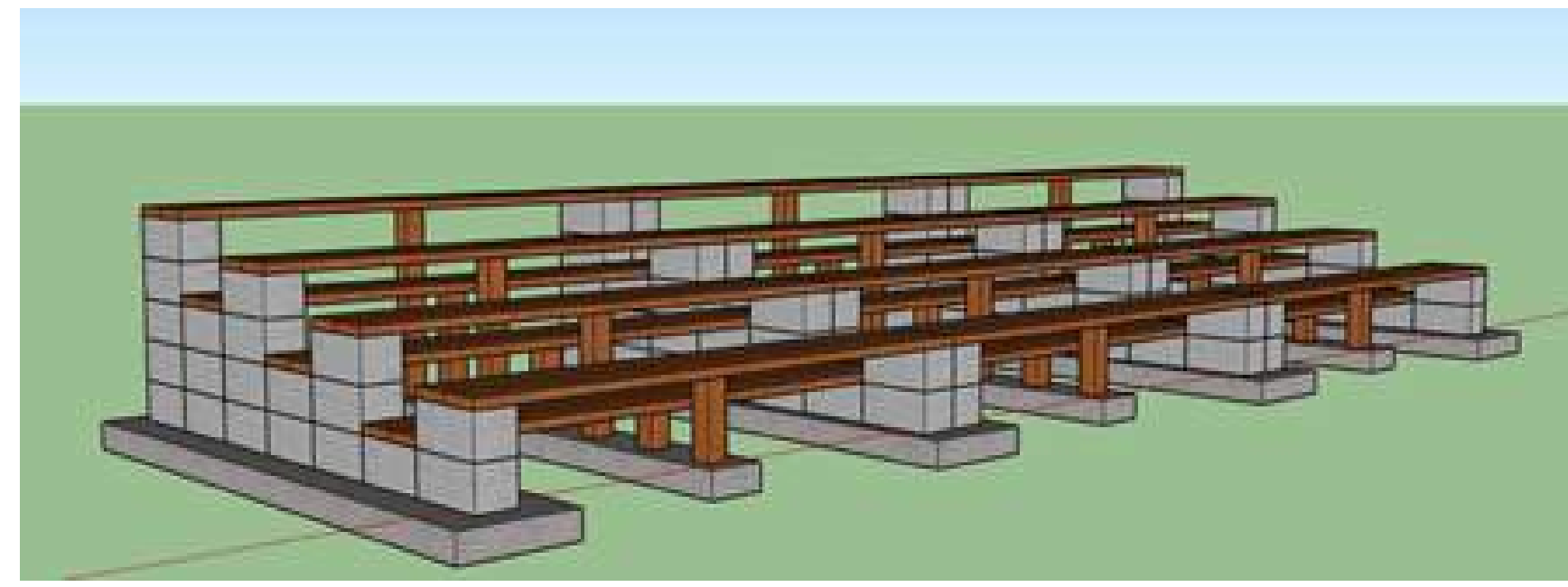


Figure 1: Preliminary design that was utilized in the sponsorship packet and for estimation. Members of the Belize team conducted a quantity take off of this 3D model for the project budget.

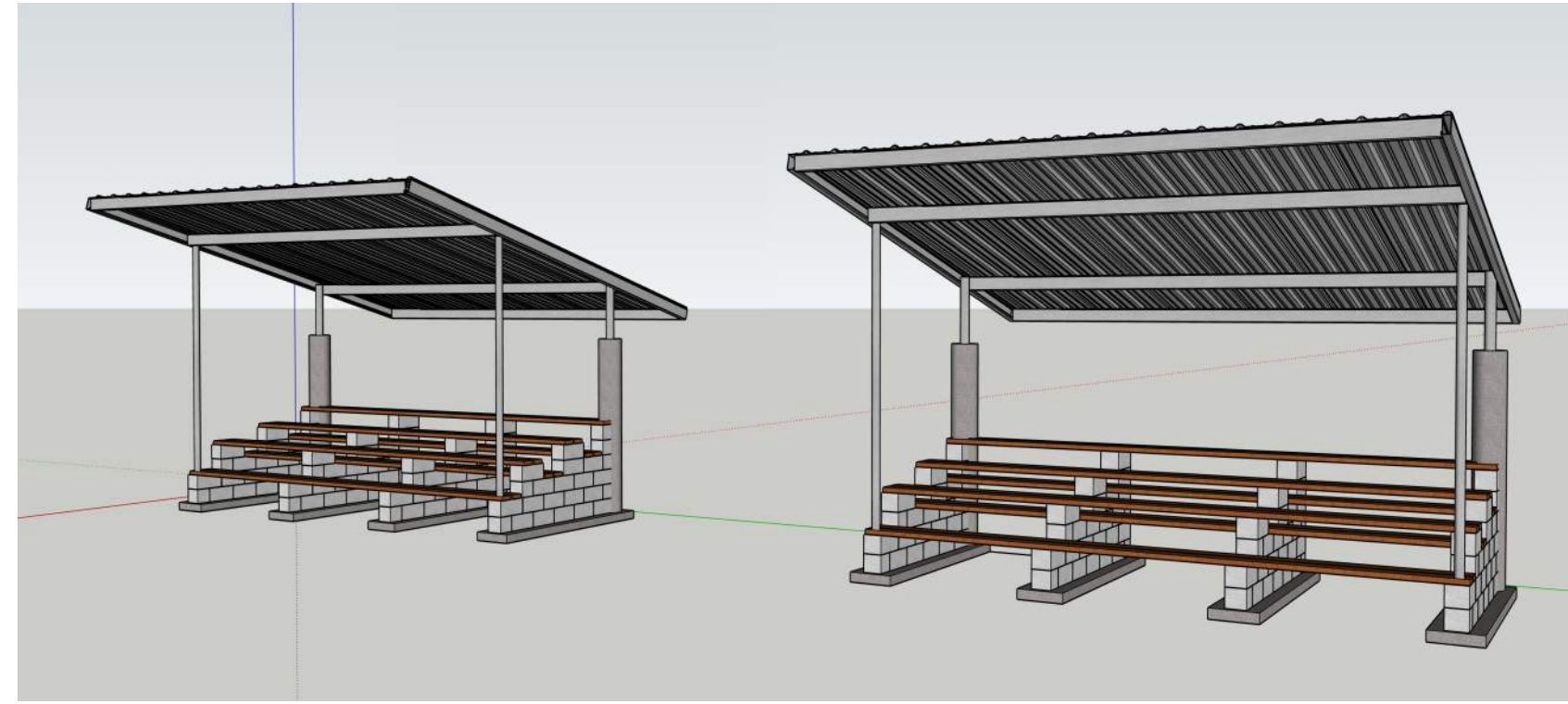


Figure 2: Final model detailing all of the as-built conditions of the bleachers that were built.

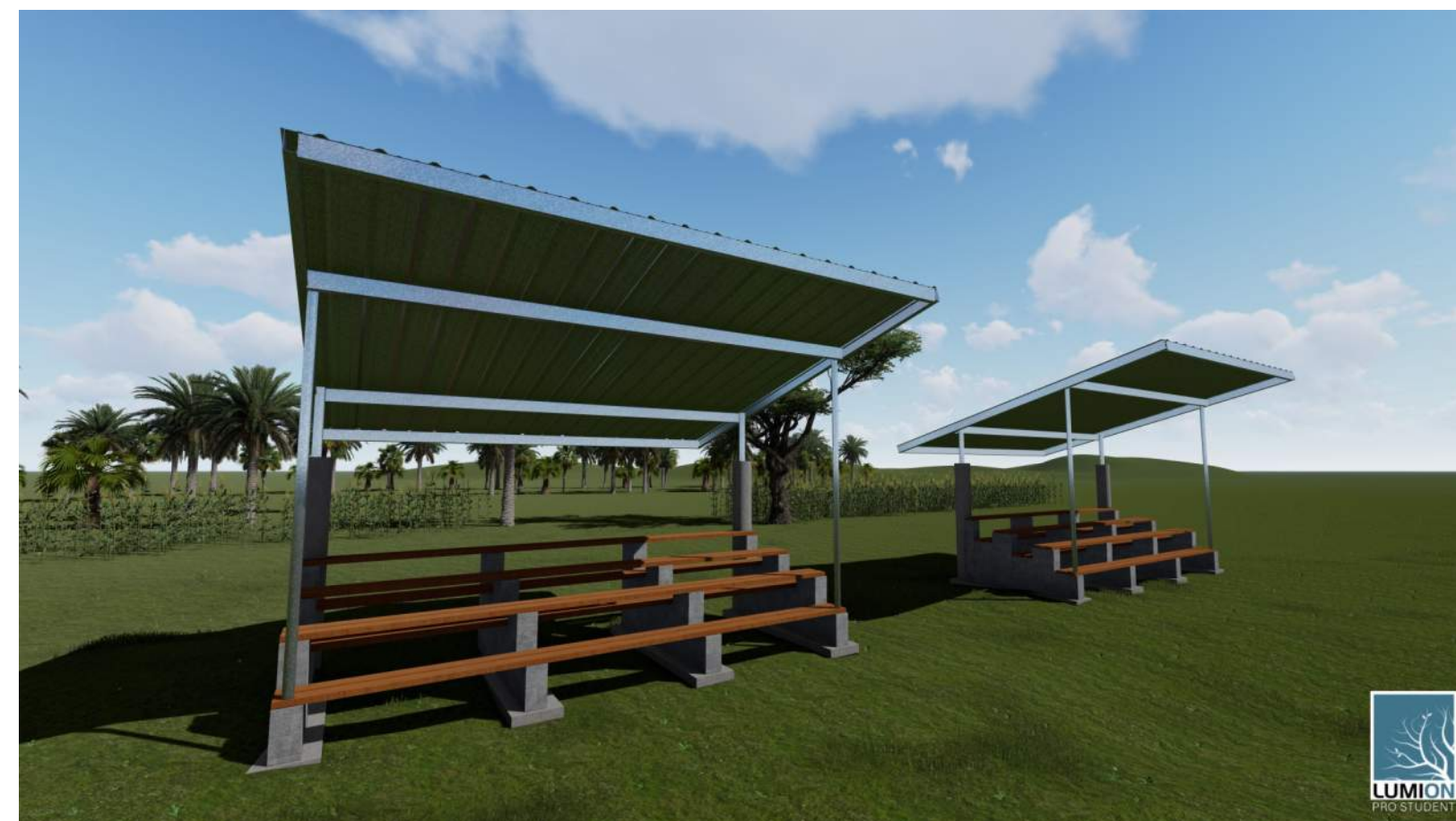


Figure 3: Final rendering of the bleacher structure built and placed on similar landscaping.



Figure 4: Picture of the finished bleacher and shade structure in Selena, Belize on that day of the opening ceremony.

In Winter of 2019, members of the Associated General Contractors, Student Chapter at Cal Poly traveled to Selena, Belize to complete soccer bleachers at the local soccer field. This trip offered an excellent case study into feasibility and benefits of new construction technology on all project sizes and in different countries. SketchUp was used in multiple phases of this project including design, estimating and the creation of as-builts. Procore offers an array of useful features including the scheduling, daily logs and meetings that were used on this project. The scheduling feature was useful in tracking travel deadlines and for monitoring critical milestones to ensure that the project was completed within the travel window. Daily logs were instrumental on tracking material usage, production, deliveries and manhours that were way easier than the old fashion way of recording with pen and paper. The meeting feature automatically tracked, reminded and forwarded agendas saving valuable time through automation.

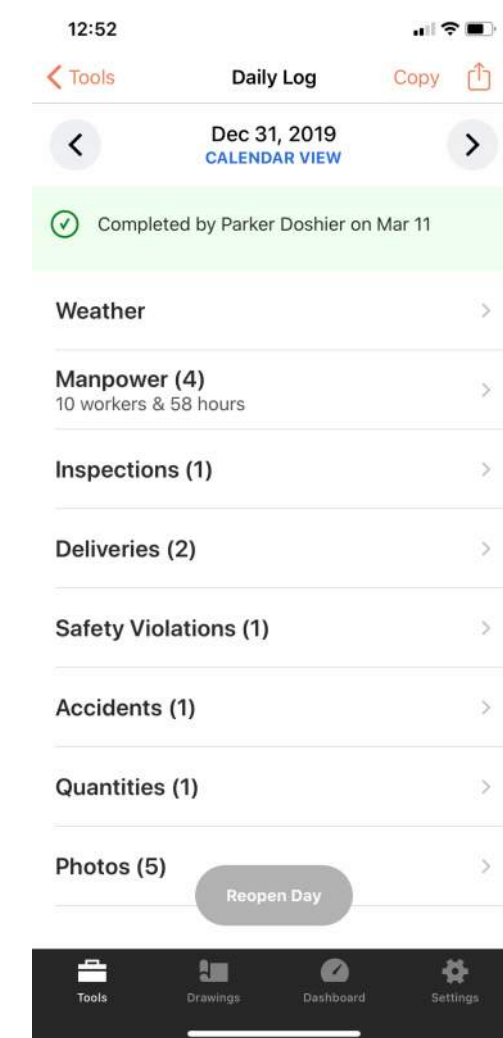


Figure 7: Screen shot of the Procore application showing easy and intuitive design.

Cal Poly SLO Construction Management
Project: 1 - Belize Service Learning Project
San Luis Obispo, California 93407
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Daily Log: Tuesday 12/31/2019

Daily Log Completed
This Daily Log was completed by Parker Doshier on Wed Mar 4, 2020 at 08:18pm CST.

WEATHER REPORT

Temperature			Precipitation Since			Humidity			Windspeed		
Low	High	Avg	Midnight	2 Days Ago	3 Days Ago	Low	Avg	High	Dew	Avg	Max
21°C	29°C	24°C	0.22 cm	0.41 cm	0.44 cm	74%	90%	100%	22°C	5.3 km/h	11 km/h

DAILY SNAPSHOT

06:00AM	09:00AM	12:00PM	03:00PM	06:00PM	09:00PM
partly-cloudy-night	cloudy	partly-cloudy-day	partly-cloudy-day	partly-cloudy-night	partly-cloudy-night
22°C	25°C	29°C	28°C	25°C	22°C

OBSERVED WEATHER CONDITIONS

No.	Weather	Delay	Sky	Temp	Average	Precipitation	Wind	Ground/Sea
1	No							

MANPOWER LOG

No.	Contact/Company	Workers	#	Man Hours	Location
1	Cal Poly Belize Crew	7	6.0	42.0	10 Workers 58.0 Man Hours
2	Bricks Unlimited	1	5.5	5.5	
3	Selena Contracting	1	5.5	5.5	
4	Selena Contracting	1	5.0	5.0	
		10		58.0	

INSPECTION LOG

No.	Start Time	End Time	Inspection Type	Inspecting Entity	Inspector Name	Location	Area
1	10:50AM	11:20AM	Concrete		Juan Peralta		

Comments: first column concrete places and inspected so that construction of remaining columns can begin

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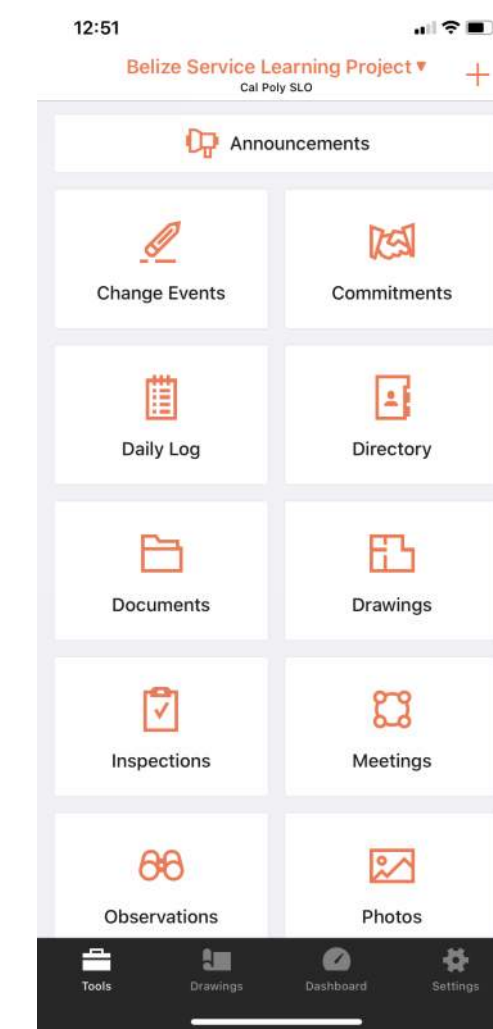


Figure 8: Screen shot of the Procore application on the main tool box screen showing some of the many accessible features available

DELIVERY LOG

No.	Time	Delivery From	Tracking Number	Contents
1	08:35AM	Selena Contracting		-2x6 Lumber boards all delivered to site
2	08:50AM	Excel Construction		-All formwork and rebar delivered to site

SAFETY VIOLATION LOG

No.	Time	Subject	Safety Notice	Issued To	Compliance Due
1	10:30AM	Scaffolding	Scaffolding built for concrete placement would not become stable and not pass inspection for use	Selena Contracting	1/1/2020

ACCIDENT LOG

No.	Time	Party Involved	Company Involved	Comments
1	11:40AM	Parker Doshier (Cal Poly Belize Crew)	Cal Poly Belize Crew	-Blowout of sonno tube because of rain

QUANTITY LOG

No.	Cost Code	Location	Units	Quantity
1	03-000 - General		Cubic Yards	2.0

Comments: -2 cubic yards of concrete used for columns

PHOTOS

IMG_2179.jpg IMG_2181.jpg

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Figure 9: Group picture of the Belize project team and members of the Selena community on the opening ceremony day.

Figure 10: The scan of the notebook shows the design sketch of the shade structure that was made while on site. Also shows a daily log from the first day of construction.

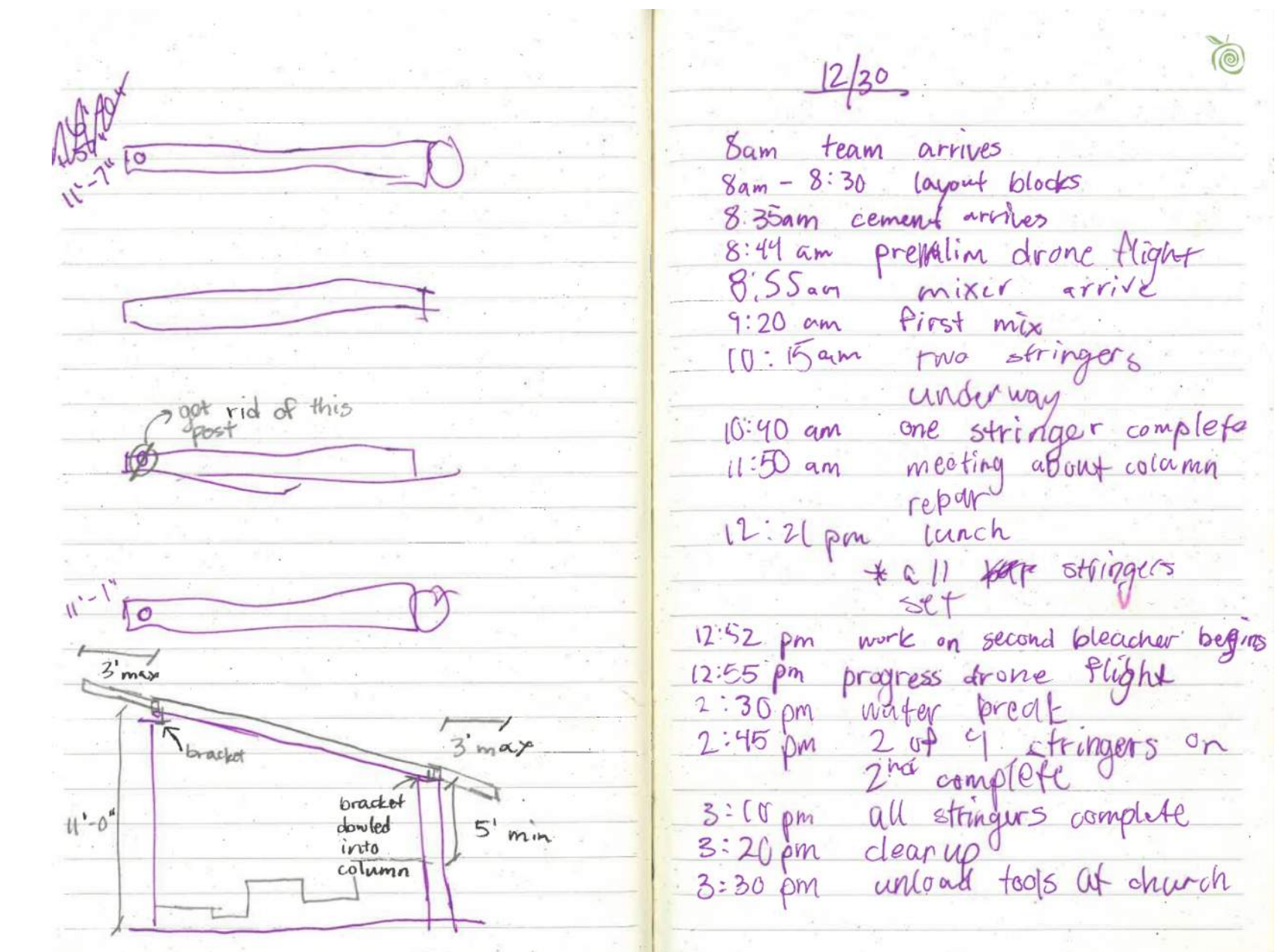


Figure 5 (left): The PDF printouts are automatically produced by Procore through one simple click of an export button.

The benefits of the Procore daily log feature is unparalleled. Information can be added and stored into the different categories on either mobile devices or from a computer. The system automatically calculates the man hours, productivity and material usage on a day to day basis. This service can help to store important job site data in an organized an accessible manor for all parties concerned to view.

Figure 6 (right): The scan of the notebook displays the daily log that kept on day two of construction.

