Case Study Analysis of Improving Productivity rates for self-perform concrete

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Category	Factors
Project Conditions	Weather Variability
Market conditions	Material shortages
	Lack of ecperienced design and project management personnel
Design and Procurement	Large number of changes
Construction Management	Ineffective communications
	Inadequate planning and scheduling
	Lack of sufficient supervisory training
Labor	Restrictive union rules
Government Policy	Slow approvals and issue of permits
Education and Training	Lack of management training for super-vision project management

Productivity is one of the most important aspects of a successful construction project, especially if the work is self-performed and not subbed out to another contractor. Usually the success of a project is directly correlated to how well the production has been throughout the course of the job. Often when a project manager notices their job isnt doing well and not making their target profits or man hours, productivity is usually the answer to that problem. This paper will examine the different ways and methods of tracking production that was used by Overaa construction as well as new techniques other companies had success with. The focus of this study is on the production rates of self-performed concrete that was done by Overaa construction on three different jobs: Jamieson Canyon Water treatment plant improvements, Sacramento Water treatment facilities, and Napas new pump station. This paper describes the different methods used for each job and compares each method with the success of the job. After comparing the three different tracking methods used by Overaa and after finding new methods used by other companies, there should be a definitive answer on which method to use when starting out in the construction industry.

Key Words: Productivity rates, Production, Self-performed, Concrete, Maximizing productivity

Production Goals

Job Number: 3275
Job Name: Sac River WWTP
Structure: Dewatering Building

Production Goal Setting Worksheet

Date: 1/16/2014
By (Supt.): Johnny Bryant
By (Foreman.): Joe Renosa

CODE (Cost Code Example: 123456)	DESCRIPTION (Not to exceed 60 characters (including spaces and punctuation)Use abbreviations / be descriptive. Include meaningful quantities. Example: Find A-D line,excv,form,embeds/PourStrip/Eff - 40cy	Characters	CREW (Example: 4	DURATION in days (Example: 8	MANHOURS (Example 192	NOTES (Notes: use this area to further describe the goal. These notes will not show up on the man hour report. Example: assumes neat cut, and template forms, flagman, and cleanup
013102-002-019	**Foreman - Dewatering Bldg**		1	75	600	
033010-000-019	**DW SOG Form incl sumps**	23	7	10	2016	Lowest level Layout, Coordinate underground MEPs. Include hanging forms for pit walls to pour monolythic with slab pour
033010-001-019	**TankEquipPads**- LO,FormPourAStrip-11pads8yds	42	4	3	96	**INCLUDED IN FILLETS**
033030-006-019	**LWRWall#6**- FabFormW/SPourStripCureForms-2,228sf/151yds	53	7	10	560	3d fab, 2d one side, 2d double, 2d ties, line & pour
033030-007-019	**LWRWall7&columns**- Strp#6FabFormLinerW/SPlceCJCur-900sq/166yds	60	7	12	672	2d strip, 4d set one side WITH FORMLINER, 2d double, 2d ties, line & pour,
033030-008-019	**LWRWall#8**- Strp#7FabFormPlaceCJsCur- 4,096sf/227yds	49	7	13	728	2d strip and clean, 3d set one side, 3d close, 3 line ties and pour.
033030-009-019	**LWRWall#9**- Strp#8&9FabFormPlaceCure-5,084sf/282yds	48	7	13	728	3d strip and set one side,3d close , 3d ties line and pour,2d strip.
033010-010-019	**SOG10Elev18.50**- EdgesTmpltsPourCur-462sf/35yds	44	4	8	256	After Walls are poured from 16.5 level to Elevation 32.00',2d edges,2d templates 2d pour and strip.
033010-011-019	**SOG11Elev.18.50**- EdgesTmpltsPourCurStrip10&11-462sf/35yds	55	4	8	256	After Walls are poured from 16.5 level to Elevation 32.00',2d edges,2d templates 2d pour and strip.
033060-012-019	**Deck#12-EL33**- CjsEdgesQCformingembdsScredsCleanUp-2,400sf	56	4	16	512	Deck shoring by Harsco-6d edges with handrails,3d CJs, 2d templates & embeds, 2d pour & strip CJs, 1d wtr blst, 1day strip edges and handrails.
033060-013-019	**Deck#13-EL33**- CisEdgesQCformingembdsScredsCleanUp-2,400sf	56	4	6	192	Deck shoring by Harsco, 2d templates & embeds, 2d pour

Final Project Analysis

IPS CASE STUDY #3 Napa Easterly WWTP Job #3290

Report Information by Superintendent: Chris West – Project Manager: Rich Pappas- Subcontractor : Covello

Description: The Napa job is a expansion job to the existing WWTP, and the Influent Pump Station structure is a cast-in place concrete structure. The S.O.G ranges from 2-4" feet depending on what side of the pump station you are at, and how deep it is. We had to use a specific kind of concrete that was expensive at 134$/yd^3. The walls are either 1', 2', or 3' thick. The depth of the station is the biggest depth we encountered in any of our projects at around 45' feet.

Self Perform Scope: We did most of all the required concrete work on the job, but we subed out the scaffolding and shoring. We should look into doing our own scaffolding and shoring because it would save us time and money.

Forming system: For our forming system we made all the forms ourselves and had them prefabricated in our shop, and we set each wall individually. We doubled up our crew size for installing bulk heads, and singled up our crew for setting wall forms. Because the vertical walls were so large and because our rebar and waterstops got busted from the shoring we hadto use form savers which wasnt in our budget at all. Unfortunately our forming hours skyrocketed because of this issue.

Item	Quantity	Unit	Pre-Bored Hrs/U	Actual Hrs/U	Variance	Actual Final Rate	Units	Project Specific Additional Comments
Concrete Walls	41,274	sf	5,647	8,097	(2,450)	(0.12)	mhs/sf	
S.O.G	14,530	sf	1,656	2,166	(510)	0.15	mhs/sf	

Lessons learned: Throughout the project there was big learning curve due to the lack of experience from the crew that slowed down the project, if we can even it out so we have more people to help the superintendant to teach the newer workers we will save a lot of time. It was a good thing we fobbed all the forms in the yard because it saved money. Obviously if our beginning project manager performed his duties like he should of, there wouldnt be problems like we had, but thankfully our new PM did a great job and helped resurrect the project, communication was a huge lesson learned from seeing the difference between a active and non-active PM. We should look into doing our own scaffolding and shoring for future projects like this to minimize cost. We also absorbed a huge cost from the sheet piles driven into the ground, and we could look into that as well for future jobs. Overall it was tough job based on certain circumstances but it also turned out to be a job many were proud to be part of because they were able to overcome the obstacles and work though them. The site is fairly small with little room to work, which made the accessibity some what limited throughout the job. The job started out a mess due to reasons affiliated with the management role of the job. Once we addressed the problem things started to come together but unfortunately we were unable to get out of the hole. There was many problems with this job and it began with the estimate. Our estimate was too low which made us extremely over budget. The hole was very deep which made it hard to get something down it whether it was tools, food, water, or laborers, and some of the formwork was very complicated to make up. Because of this issue we had to use a crane for most of the job which wasnt in the budget and we were very far behind on our wall pours.

Attachments: Pictures, poor logs, drawings, estimate, budget, production report and goals.

Man Hour Report

WEEK ENDING DATE	ESTIMATED PRODUCTION RATE	ACTUAL CURRENT PRODUCTION RATE	OVER (UNDER) ESTIMATE
06/21/08	16.14 HR/100SF	4.55 HR/100SF	-11.59
06/28/08	16.14 HR/100SF	4.69 HR/100SF	-11.45
07/05/08	16.14 HR/100SF	4.54 HR/100SF	-11.6
07/12/08	16.14 HR/100SF	4.72 HR/100SF	-11.42
07/19/08	16.14 HR/100SF	4.25 HR/100SF	-11.89
07/26/08	16.14 HR/100SF	4.59 HR/100SF	-11.55
08/02/08	16.14 HR/100SF	4.43 HR/100SF	-11.71
08/09/08	16.14 HR/100SF	4.78 HR/100SF	-11.36
08/16/08	16.14 HR/100SF	4.62 HR/100SF	-11.52
08/23/08	16.14 HR/100SF	4.63 HR/100SF	-11.51
08/30/08	16.14 HR/100SF	4.7 HR/100SF	-11.44
09/06/08	16.14 HR/100SF	4.7 HR/100SF	-11.44
09/13/08	16.14 HR/100SF	4.7 HR/100SF	-11.44