

Using Technology to Turn the Tide on Construction Productivity



Photo by www.constructconnect.com

[Article was originally posted on www.constructconnect.com]

By Conley Smith,

If the construction industry is anything—it's consistent. For roughly 20 straight years, the industry has racked up the "least improved" award for having the lowest annual productivity gains globally of any industry. This means construction is still way less productive now than it was in 1995, according to a 2017 McKinsey Global Institute (MGI) study.

The facts are straightforward. The global average for the value-added per hour has inched up by 1% a year in the past 20 years—about one-quarter the growth rate of manufacturing. In the U.S. alone, construction productivity has steadily declined since 1968 while other sectors have seen productivity grow by 10 to 15 times.

What's fueling this unfortunate trend? McKinsey traces some of this to a productivity boom in the 1990s that fizzled and the 2007-2009 economic downturn. Other factors include everything from project complexity to a skilled labor shortage to under-investment in technology and digitization. There's also the fact that many contractors have difficulty with planning. This is especially true if they are dependent on erratic government funding for projects.

What's Slowing Down Productivity?

Many experts point to technology, aka digitization, as the key to improving construction productivity. However, investing in digital technologies and advanced automation is also a huge stumbling block for many contractors—including small firms where profit margins remain extremely tight.

In fact, the U.S. construction industry has only invested 1.5% of value-added technology, compared with 3.3% in manufacturing, and an overall average in the economy of 3.6%. As a result, tackling the root causes of poor productivity becomes a vicious cycle where contractors routinely underspend on technology by up to 70%.

The High Cost of Low Productivity

It's mind-boggling to think that construction-related spending accounts for 13% of the world's GDP. Yet, the sector's productivity growth has only increased 1% over the past 20 years. This adds up to \$1.6 trillion in additional value that could be created through higher productivity, meeting half the world's infrastructure needs.

Last year's McKinsey study noted that retail has transformed from mom-and-pop stores to large-scale retailers with global supply chains and digitized distribution systems. Another example is how manufacturing is using lean principles and automation to overhaul its industry.

Meanwhile, the construction industry in North America has failed to modernize and struggled to meet the demands of an aggressive infrastructure program or address the U.S. housing shortage.

Small Steps to Turn the Tide

With contractors routinely blowing their schedule by 20% and their budget by 80%, new digital tech promises to boost productivity by as much as 60%. But where do contractors begin? Starting small is a great way to turn around productivity. Don't attempt to boil the ocean with big, disruptive tech. For example, contractors can start by selecting, implementing, and training staff on software and tools that track all the variables of a construction project—from takeoff to estimating to bidding.

When contractors have digital-level control over construction input, costs, processes, and relationships, they are more effective in using technology to complete day-to-day tasks. Using software over spreadsheets for takeoff, estimating, bidding, accounting, and project management mean contractors can immediately capitalize on efficiencies. It is also essential for contractors to look for integrated software solutions to step up productivity.

Once contractors have mastered the digital basics, they can begin to consider more advanced, whiz-bang technology like 3D building information modeling (BIM), drones, and emerging 5D BIM platforms. Or even more futuristic tech like the Internet of Things (IoT) to improve on-site monitoring of materials, labor, and equipment productivity. Also, cloud-based technologies are expected to increase on-site productivity by as much as 50%.

Tech Gaining a Foothold

No doubt, playing catch-up with productivity can be a steep hill to climb. U.S. construction productivity would have to jump 44% over the next half-century to get anywhere near past rates of economic growth, according to McKinsey. It would be an improvement to see even a 2% increase in annual productivity growth. McKinsey suggests this is obtainable if the industry is willing to invest in retooling an aging workforce or training a younger generation on the latest equipment and digital tools. They even go as far as to suggest companies invest in establishing innovation officers.

The good news is that interest is growing when it comes to adopting new digital technologies to address productivity issues. The McKinsey survey noted that



California Sub-Bid Request Ads

ATKINSON CONSTRUCTION

Requests
Sub-bids from All Qualified & Certified **DBE** Subcontractors/Suppliers
for:

**Caltrans Contract 08-0Q75U4
Construction on State Hwy 60
in San Bernardino and Riverside Counties
from Euclid Avenue Undercrossing in Ontario
to Route 60/91/215 Separation in Riverside**

Bids Thursday, February 7, 2019 per Addendum 2

Description of Work, Services & Supply (but not limited to): Asphalt, Aggregate Base, Aggregate Subbase, Alternative Inline Terminal System, Base Bond Breaker, Clear and Grub, Concrete Barrier (various types), Construction Area Signs, Demo, Drainage, Earthwork, Electrical, Erosion Control, Excavation, Fence, Flatwork, Furnish and Install Sign Structure (Truss), Grind Existing Concrete Pavement, Individual Slab Replacement (RSC), Joint Seals, Jointed Plain Concrete Pavement (including RSC), Landscape, Lean Concrete Base, Lean Concrete Base Rapid Setting, Maintenance of Traffic, MBGR, Minor Concrete (Curb / PCC Dike, various types / Stamped Concrete / Curb, Sidewalk and Curb Ramp / Vegetation Control), Midwest Guardrail System (Wood Post), Miscellaneous Iron and Steel, Maintenance of Traffic, Noise Monitoring, OHSS, Pavement, Pavement Marking / Traffic Stripe, Pavement Supply, PCCP Paving, Pipe Supply (18" Slotted Corrugated Steel Pipe - .064" thick), QA/QC, Rapid Strength Concrete Base, Road Barrier, Roadway, Roadway Excavation, Rock Blanket, Seal, Sign, Survey, Temporary Crash Cushion Module, Temporary Railing (Type K), Temporary Traffic Screen, Traffic Control System, Transition Railing (Type WB-31), Trucking.

REFER TO PROJECT SPECS FOR COMPLETE BID ITEM LIST.

ENGINEER'S ESTIMATE is \$140,000,000

14% DBE Project Goal

******Lower Tier DBE participation is greatly encouraged******

Guy F. Atkinson

License # 1004388

18201 Von Karman Ave, 8th Floor, Irvine, CA 92612

social.esteeming@atkn.com | Phone: 949-382-7145 | Fax: 949-553-0252

Guy F. Atkinson is a union contractor and an Equal Opportunity Employer. Atkinson is signatory to the Carpenters, Cement Masons, Laborers and Operating Engineers Unions. 100% Performance & Payment Bonds from an approved surety company will be required for subcontractors with contract value greater than \$100,000. Atkinson will pay the cost of bonds up to 2.0%. We will assist in obtaining necessary equipment, supplies, materials or related services. We will split items of work (see project specs for full list of bid items) and provide assistance in obtaining bonding, lines of credit and insurance where needed. Prices must stay firm through subcontract and purchase order execution. Subcontractors will be expected to sign Atkinson's standard subcontract and to comply with our company's standard insurance requirements which include a waiver of subrogation. Please provide your contractor's license #, DBE cert # and DIR # with your quote. Atkinson requests that subs and vendors register and prequalify in our online system at <https://www.atknextranet.com> prior to bidding.

TO DOWNLOAD PLANS, SPECS, THE INFO HANDOUT, ANY ADDENDA, ETC and VIEW Q&A:

Please go to the Caltrans Contracts web site

<http://www.dot.ca.gov/des/oe/weekly-ads/oe-project.php?q=08-0Q75U4>

Or contact Atkinson TO VIEW AND DOWNLOAD ALL BID DOCUMENTS
through our online service, BuildingConnected.

Please contact Atkinson with any questions or for help with your bid.

CAHILL CONTRACTORS LLC requests bids from Certified SBE, LBE, MBE, WBE Subcontractors and Suppliers for ALL trades EXCEPT:

Driven Piles / Elevators / Mechanical / Electrical / Plumbing / Fire Sprinklers / Solar Hot Water / Tower Crane / Personnel Hoist

**MISSION BAY BLOCK 6W -
REMAINING TRADES
691 China Basin Street,
San Francisco, CA 94158**

This is an OCII project with construction workforce and prevailing wage requirements.

BID DATE: 1/29/19 @ 2 PM

Voluntary Pre-bid Meeting: 1/8/19 @ 3 PM,
Mission Creek Senior Community
225 Berry Street, San Francisco, CA 94158

BID DOCUMENTS:

Please contact Colby for access to documents on BuildingConnected.

CONTACT:

Colby Smith at estimating@cahill-sf.com,
(415) 677-0611.

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California Sub-Bid Request Ads

REQUESTING DVBE COMPANIES FOR THE FOLLOWING PROJECT:

PROJECT:

SONORA ELEMENTARY SCHOOL – PORTABLE CLASSROOM REPLACEMENT

OWNER:

SONORA SCHOOL DISTRICT

LOCATION:

830 GREENLEY ROAD, SONORA, CA 95370

BID DATE:

JANUARY 31, 2019 @ 2:00 p.m.

Bids should be sent to: estimating@carterkelly.com and faxed to 530-621-2344

CARTER-KELLY, INC.

P.O. BOX 1477 · PLACERVILLE, CA 95667

PHONE: 530-621-0950 · FAX: 530-621-2344

CONTACT: JIM CARTER

Carter-Kelly, Inc. is proud to be an EEO and requests quotations from Disabled Veterans, Small Business, Minority and Woman Owned businesses.

Any questions please call Robyn Kelly 530-621-0950 or email: robynk@carterkelly.com

Request For Qualified DBE

Subcontractors, Consultants and Suppliers For:

Caltrans Contract 04-4G8404

Replace Capell Creek Bridge

In Napa County

Bid Date: Wednesday January 23, 2019 at 2:00 PM

Requesting quotes for but not limited to:

Clearing/Tree Removal, Construction Area Signs, Temporary Signals, Traffic Striping, Landscaping/ Erosion Control, Rebar, Active Treatment System, Metal Beam Guard Rail, Bridge Demolition, Paving and Grading, Furnish and Erect Precast Girders, Isolation Casing, Temporary Bridge, PTFE Bearings, Drainage, Concrete, Furnish & Install Miscellaneous Metal, Fencing, Furnish & Install Bridge Rail, CIDH/Tiebacks, Trucking, Materials & Supplies.

CEC is willing to breakout any portion of work to encourage DBE participation.

Plans and specs are available for viewing at our Pleasanton office.

They may also be viewed and downloaded from the Caltrans Website:

<http://www.dot.ca.gov/des/oe/weekly-ads/all-adv-projects.php>

100 % Payment & Performance Bonds will be required from a single, treasury-listed surety subject to our approval. CEC will pay bond premiums up to 1.5%. Subcontractors awarded on any project will be on CEC's standard form for subcontract without any modifications. Please call for assistance in bonding, insurance, lines of credit, technical info, equipment and supplies or if any other assistance is needed.

California Engineering Contractors, Inc.

20 Happy Valley Road, Pleasanton, CA 94566

Phone (925) 461-1500 Fax (925) 461-0510

Email: estimator@cecmain.com

Estimator-Jeff Hollfelder

AN EQUAL OPPORTUNITY EMPLOYER



11555 Dublin Boulevard

Dublin, CA 94568-2909

Phone: (925) 829-9220

Estimator: JACK SHEWMAKER

Website: www.desilvagates.com

Golden Gate Constructors (GGC) is preparing a bid as a Prime Contractor for the project listed below:

CALTRANS ROUTE 1 - CONSTRUCTION ON STATE HIGHWAY IN THE CITY AND COUNTY OF SAN FRANCISCO FROM SAN MATEO COUNTY LINE TO HOLLOWAY AVENUE AND FROM LINCOLN WAY TO RUCKMAN AVENUE UNDERCROSSING,

Contract No. 04-4K1104

Federal Aid Project No. ACSB1NH-P001(654)E Disadvantaged Business Enterprise Goal Assigned is 16%

OWNER:

STATE OF CALIFORNIA – DEPARTMENT OF TRANSPORTATION
1727 30th Street, Bidder's Exchange, MS 26,
Sacramento, CA 95816

BID DATE: JANUARY 30, 2019 @ 2:00 P.M.

We hereby encourage responsible participation of certified Disadvantaged Business Enterprises, and solicit their subcontractor or materials and/or suppliers quotation for the following types of work including but not limited to:

AC DIKE, CLEARING AND GRUBBING/DEMOLITION, COLD PLANE, CONCRETE BARRIER, CONSTRUCTION AREA SIGNS, ELECTRICAL, FABRIC/GEOSYNTHETIC PAVEMENT INTERLAYER, LEAD COMPLIANCE PLAN, METAL BEAM GUARDRAIL, MINOR CONCRETE, PCC GRINDING, PCC PAVING, ROADSIDE SIGNS, STRIPING, SURVEY/STAKING, SWPPP/WATER POLLUTION CONTROL PLAN PREPARATION, TRAFFIC CONTROL SYSTEMS, UNDERGROUND, TRUCKING, WATER TRUCKS, STREET SWEEPING, HOT MIX ASPHALT (TYPE A) MATERIAL, RUBBERIZED HMA (GAP GRADE) MATERIAL.

Plans and specifications may be reviewed at our office located at 11555 Dublin Boulevard, Dublin, CA or at your local Builders Exchange, or reviewed and downloaded from the ftp site at <ftp://ftp%25desilvagates.com:f7pa55wd@pub.desilvagates.com> (if prompted the username is ftp@desilvagates.com and password is f7pa55wd) or from the Owner's site at www.dot.ca.gov/hq/esc/oe/weekly_ads/all_adv_projects.php

Fax your bid to (925) 803-4263 to the attention of Estimator Jack Shewmaker. If you have questions for the Estimator, call at (925) 829-9220. When submitting any public works bid please include your DUNS number and DIR number. For questions regarding registration for DIR use the link at: www.dir.ca.gov/Public-Works/PublicWorks.html

If you need support services and assistance in obtaining bonding, lines of credit, insurance, necessary equipment, materials and/or supplies or related assistance or services, for this project call the Estimator at (925) 829-9220, or contact your local Small Business Development Center Network (<http://californiasbdc.org>) or contact the California Southwest Transportation Resource Center (www.transportation.gov/osdbu/SBTRCs). GGC is willing to breakout portions of work to increase the expectation of meeting the DBE goal.

At our discretion, 100% Payment and 100% Performance bonds may be required as a subcontract condition. This will be a PREVAILING WAGE JOB. GGC is an Equal Opportunity/Affirmative Action Employer.



Kiewit Infrastructure West Co.

4650 Business Center Drive Fairfield, CA 94534

Attn: Victor Molina · norcal.bids@kiewit.com

Fax: 707-439-7301

Requests sub-bids from qualified California Unified Certification Program (CUCP) certified Disadvantaged Business Enterprise (DBE), Subcontractors, Consultants, and/or Suppliers seeking to participate in the Construction on State Highway in Napa County about 15 Miles East of Rutherford from 1.1 Miles East of Knoxville Road to 0.3 Mile West of Capell Valley Crest Project.

<http://www.dot.ca.gov/obeo/index.html>

Subcontractors and Suppliers for the following project:

Capell Creek Bridge Project

Contract No. 04-4G8404|

Federal-Aid Project: ACSB1ST-P128 (062)E

Owner: Caltrans

Bid Date: January 23, 2019 at 2:00 P.M.

Disadvantaged Business Enterprises (DBEs)

wanted for the following scopes, including, but not limited to:

Aggregates, Active Treatment System, Bridge Removal, CIDH Piling, Clear and Grub, Cold Plane AC Pavement, Concrete Pumping, Concrete Reinforcement, Concrete Supply, Concrete Structural & Precast, Concrete Washout, Concrete Stain, Demolition, Earthwork, Erosion Control, Fencing, Guardrail System, K-rail, HMA Dike, HMA Paving, Hydro-seeding, Joint Seal, Landscaping, Minor Concrete, Misc. Metals, Pavement Markings & Striping, Paving Fabric, Pipe & Valve Supply, Polyester Concrete Overlay, Precast Concrete, Prepare Bridge Deck Surface, Rock Slope Protection, Signage, Traffic Control, SWPPP, Survey, Hazardous Material Abatement, Trucking & Hauling, Sweeping, Water Trucks.

Bonding, insurance and any technical assistance or information related to the plans or specification and requirements for the work will be made available to interested certified, DBE suppliers and subcontractors.

Assistance with obtaining necessary equipment, supplies, materials, or services for this project will be offered to interested certified suppliers and subcontractors.

Subcontractor and Supplier Scopes are due

January 18, 2019 and Quotes

NO LATER THAN January 22, 2019 at 5 PM.

Plans are available for viewing at our office at our address below and through SmartBidNet (SBN).

All subcontractors that are registered in our SBN database will receive an invitation to bid. Please visit <http://www.kiewit.com/districts/northern-california/overview.aspx> to register your company and to be able to receive bidding information, view plans and specifications.

You can view the plans in our office during regular business hours by appointment.

Performance Bond and Payment Bonds may be required for subcontractors and a suppliers bond for suppliers.

Davis-Bacon Act Applies

Buy America Requirements Apply

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California Sub-Bid Request Ads

DESILVA GATES CONSTRUCTION

11555 Dublin Boulevard • P.O. Box 2909
Dublin, CA 94568-2909
(925) 829-9220 / FAX (925) 803-4263
Estimator: **ERIC ALLRED**
Website: www.desilvagates.com
An Equal Opportunity/Affirmative Action Employer

DeSilva Gates Construction (DGC) is preparing a bid as a Prime Contractor for the project listed below:

**CALTRANS ROUTE 50 –
CONSTRUCTION ON STATE HIGHWAY IN
SACRAMENTO COUNTY FROM
HOWE AVENUE OVERCROSSING TO
0.65 MILE EAST OF 65TH STREET**
Contract No. 03-1F1904,
Federal Aid Project No. ACNH-P050(148)E
Disadvantaged Business Enterprise Goal
Assigned is 17%

OWNER

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION
1727 30th Street, Bidder's Exchange, MS 26,
Sacramento, CA 95816

BID DATE: February 12, 2019 @ 2:00 P.M.

DGC is soliciting quotations from certified Disadvantaged Business Enterprises, for the following types of work and supplies/materials including but not limited to:

AC DIKE, CLEARING AND GRUBBING/DEMOLITION, CONSTRUCTION AREA SIGNS, CRASH CUSHION, ELECTRICAL, EMULSION SUPPLIER, EROSION CONTROL, FENCING, IRRIGATION, K-RAIL SUPPLIER, LANDSCAPING, LEAD COMPLIANCE PLAN, METAL BEAM GUARDRAIL, MINOR CONCRETE, ROADSIDE SIGNS, ROADWAY EXCAVATION, ROCK SLOPE PROTECTION SUPPLIER, SAWCUTTING, SIGN STRUCTURE, STRIPING, SWPPP/WATER POLLUTION CONTROL PLAN PREPARATION, TEMPORARY EROSION CONTROL, TESTING, TRAFFIC CONTROL SYSTEMS, TRAFFIC CONTROL MATERIAL SUPPLIER, UNDERGROUND, VEGETATION CONTROL, TRUCKING, WATER TRUCKS, STREET SWEEPING, EROSION CONTROL MATERIAL, CLASS 2 AGGREGATE BASE MATERIAL, HOT MIX ASPHALT (TYPE A) MATERIAL.

Plans and specifications may be reviewed at our offices located at 11555 Dublin Boulevard, Dublin, CA or 7700 College Town Drive, Sacramento, CA, or at your local Builders Exchange, or reviewed and downloaded from the ftp site at <ftp://ftp%25desilvagates.com:f7pa55wd@pub.desilvagates.com> (if prompted the username is <ftp://ftp%25desilvagates.com> and password is [f7pa55wd](ftp://ftp%25desilvagates.com)) or from the Owner's site at www.dot.ca.gov/hq/esc/oe/weekly_ads/all_adv_projects.php

Fax your bid to (925) 803-4263 to the attention of Estimator Eric Allred. If you have questions for the Estimator, call at (925) 829-9220. When submitting any public works bid please include your DUNS number and DIR number. For questions regarding registration for DIR use the link at: www.dir.ca.gov/Public-Works/PublicWorks.html

If you need DBE support services and assistance in obtaining bonding, lines of credit, insurance, necessary equipment, materials and/or supplies or related assistance or services, for this project call the Estimator at (925) 829-9220, or contact your local Small Business Development Center Network (<http://californiasbdc.org>) or contact the California Southwest Transportation Resource Center (www.transportation.gov/osdbu/SBTRCs). DGC is willing to breakout portions of work to increase the expectation of meeting the DBE goal.

At our discretion, 100% Payment and 100% Performance bonds may be required as a subcontract condition. This will be a PREVAILING WAGE JOB. DGC is an Equal Opportunity/Affirmative Action Employer.

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ENVIRONMENTAL CONTRACTORS, INC.

CAL LIC. NO. 723241
11555 Dublin Boulevard
Dublin, CA 94568-2909
Phone: (925) 803-4333 • FAX: (925) 803-4334
Estimator: Chris Pieri
cpieri@pacificstates.net

Pacific States Environmental Contractors, Inc. (PSEC) is preparing a bid as a Prime Contractor for the project listed below:

PROJECT:
Water Pollution Control Plant
Dirt Relocation 2019

OWNER:
City of San Leandro

BID DATE: February 6, 2019 @ 2pm

We hereby encourage responsible participation of LBE's and solicit their subcontractors or materials and/or suppliers quotation for the following types of work including but not limited to:

Trucking and Soil Treatment

At our discretion, 100% Payment and 100% Performance bonds may be required as a subcontract condition. Please call if you need assistance in obtaining bonding, insurance, equipment, materials and/or supplies for this project.

This will be a PREVAILING WAGE JOB.

Specifications may be reviewed at our office located at 11555 Dublin Boulevard, Dublin, CA. PSEC is willing to breakout any portion of work to encourage LBE's and solicit their subcontractor or materials and/or suppliers and trucking quotation as well as increase the expectations of meeting the San Leandro business preference and participation goal. The Project plans and contract book may be obtained free of charge from the City's website <http://www.sanleandro.org/depts/finance/purchasing/bids>. If you require any assistance, or need help obtaining plans please contact the Estimator, Chris Pieri email him at cpieri@pacificstates.net or call (925) 803-4333 and bids may be faxed to us at (925) 803-4334. When submitting any public works bid please include your DUNS number and DIR number. For questions regarding registration for DIR use the link at: www.dir.ca.gov/Public-Works/PublicWorks.html.

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nibbi

Project Name: 1028 Market Street
Location: San Francisco, California
Bid Date: January 30, 2019 @2pm
Labor Requirements: Private - Nibbi is signatory to the Carpenter's and Laborer's Union.
Project Schedule: March 2019 - June 2021

Nibbi Brothers has been selected as the General Contractor for the 1028 Market Street project in San Francisco. We are in receipt of the GMP DOCUMENTS and are currently REBIDDING qualified subcontractors for DIV 01 - 44 (Excluding MEPF & HAZMAT Removal). Bids are due Wednesday, January 30, 2018 @ 2:00pm. Due date extensions will NOT be available. The project will consist of 193 units; 13 residential floors above grade, 1 level of below grade MEP space, and a rooftop mechanical penthouse level with occupied deck. Floors 2 through 13 are primarily utilized for residential units. Level 1a/ 1b (two stories) will include residential support spaces, retail, an open fitness courtyard, lobby and a leasing office.

To obtain bid documents for this project please contact Kristin Medwick, Senior Precon & Estimating Coordinator via email, kristinm@nibbi.com.

For specific questions regarding this project, please contact Phillip Raymann, Senior Project Manager via email, phillipr@nibbi.com.

Using Technology to Turn the Tide on Construction Productivity

■ Continued from page 1

44% of respondents in the construction industry have adopted some digital technologies—this is expected to reach 70% by 2020.

By adding more digital tools and getting stronger buy-in from the field, construction businesses are beginning to see productivity gains. When it comes to adopting tools, many estimators and project managers are already using takeoff and estimating software. With the addition of an integrated project lead platform and bidding software, contractors can begin to keep their project pipeline full and their crews working more efficiently.

SOURCE:

<https://www.constructconnect.com/blog/construction-technology/using-technology-turn-tide-construction-productivity/>