

## Electric Dreams: Will Heavy Construction Equipment Go All-Electric?



Photo by Hypnotica Studios Infinite - [www.flickr.com](http://www.flickr.com)

[ Article was originally posted on  
[www.constructconnect.com](http://www.constructconnect.com) ]

By Kendall Jones,

In the next 20 years, it's possible that all the backhoes, excavators, dozers, graders, and other heavy equipment we use on construction sites will move away from diesel engines to all-electric. For years, the Environmental Protection Agency (EPA) has been enacting stricter emissions standards for nonroad diesel engines like those used in construction.

Using a progressive tiered approach to reduce emissions, with Tier 4 Final being the most recent, the EPA limits new diesel engines to near-zero levels for emissions of nitrogen oxides (NOx) and particulate matter (PM). To accomplish those massive reductions in emissions, construction equipment manufacturers spent years researching and developing technology to get the required levels while still providing the same power and performance that customers have come to expect from previous models.

While the EPA isn't currently working on establishing further tiers, that could change as the European Union (EU) has already approved Stage V emission standards which start going into effect this year. Up until this point, the EU and the

EPA had been in lockstep with enacting new tiers/stages for emissions.

Future regulations could require zero emissions on heavy construction equipment which would pave the way for manufacturers to drop production of diesel engines and go all-electric. This may seem farfetched but just look at what's going on in the auto industry.

Over the past few years, the auto industry has been making a bigger push to transition to electric vehicles. In an effort to reduce the impact human activities have on the environment and reduce carbon emissions, a growing number of countries have adopted policies to ban the sale of gas and diesel vehicles. Ireland, Norway, India, and the Netherlands are some of the countries that will ban the sale of new gas and diesel vehicles by 2030. Many other countries have, or are planning to enact, similar bans over the next two decades.

Tesla has been joined by dozens of startups developing and producing electric vehicles. Automakers like GM, Volvo, and Jaguar Land Rover have vowed to go all-electric or have electric versions of all their models over the next few years. In addition, pretty much every automaker in the world is currently investing and developing electric and hybrid vehicles.

So, will manufacturers of heavy construction equipment follow suit with all-electric models in the future? Globally, the construction industry is responsible for 11% of energy-related carbon emissions so it's not unreasonable to think that countries will at some point ban the sale of heavy equipment with diesel engines much like they are doing now the cars and trucks. Benefits of all-electric heavy equipment include reduced noise, zero emissions, reduced service times and a lower total cost of ownership.

Until that time comes, we're likely to see a lot more hybrid, as well as some all-electric, models of current equipment lineups from manufacturers in the coming years. Here's a look at a few of the current and upcoming all-electric offerings from some of the major players in the industry:

### Volvo CE

Volvo CE showed off their all-electric compact excavator, the EX2, back in 2017. The prototype machine is the first 100% electric compact excavator and is 10 times quieter and 10 times more efficient than its diesel counterpart. The machine has zero emissions and the total cost of ownership is greatly reduced.



# California Sub-Bid Request Ads

## AECOM

One California Plaza • 300 S. Grand Avenue • Los Angeles, CA 90071

### REQUEST FOR BIDS & NOTICE OF INTEREST

AECOM is bidding on the following project as a Prime Contractor:  
**The County of Los Angeles Department of Public Works for  
 On-Call Master Plan and Strategic Facilities Planning Services**  
**Due Date: Thursday, March 7, 2019, 2pm**

AECOM is seeking qualifications from Community Business Enterprises (CBEs) and other subcontractors for field assessments and the following work:

- Planning and Architecture
- Cost Estimating
- Civil /Structural Engineering
- Economic Analysis
- Electrical Engineering
- Environmental Planning
- Financing Strategies
- Geotechnical Engineering
- Land Use Planning
- Mechanical Engineering (HVAC and Plumbing)
- Public Outreach
- Transportation Planning
- Space Planning

Experience providing similar services for the County of Los Angeles, and/or specialists in corrections, healthcare, office, public safety facility types are preferred. This proposal is in alignment with the County of Los Angeles's CBE Program requirements and certified CBEs are encouraged to respond.

AECOM intends to conduct itself in good faith in regards to all firms.

Interested businesses should email a brief overview of relevant experience listing any County of L.A. experience along with CBE documentation by **Monday, March 4, 2019**, to Deanna Weber at [deanna.weber@aecom.com](mailto:deanna.weber@aecom.com) and Wei Wei Scott at [weiwei.scott@aecom.com](mailto:weiwei.scott@aecom.com).

We are an Equal Opportunity Employer

### Arcadis U.S., Inc.

100 Montgomery Street, Suite 300,  
 San Francisco California, 94104  
 Contact: Crystal Graffio  
 Email: [crystal.graffio@arcadis.com](mailto:crystal.graffio@arcadis.com)  
 Phone: 714.508.3121

REQUEST FOR DBE, MBE, WBE and OBE who meet the criteria outlined in the Contract Equity Program for East Bay Municipal Utility District (EBMUD): RFP No. 565-19-001, As-Needed Cost Estimating, Constructability and Scheduling Review, due Friday, March 8, 2019 by 4:00 PM. **PLEASE RESPOND ASAP and no later than Monday, February 25, 2019.**

We are seeking qualifications for Third Party Constructability; Third Party Cost Estimate/ Value Engineering; Construction Scheduling Review; Environmental Compliance; Geotechnical Services; Traffic Control. Please email a Letter of Interest, brief qualifications, and no more than two resumes per service demonstrating that you meet all of the required qualifications specified in the RFP for the service(s) referenced above, and a copy of your DBE/MBE/WBE certification, if applicable.

RFP available upon request or download at the EBMUD website at

<https://www.ebmud.com/business-center/requests-proposal-rfps/needed-cost-estimating-constructability-and-scheduling-review/>

Arcadis intends to work cooperatively with all qualified firms seeking work on this project. Please contact Crystal Graffio if you need assistance obtaining bonds, lines of credit, or any insurance that may be required by this RFP.



## Thompson Fall Montana Sub-Bid Request Ad



**SYBLON REID**  
 General Engineering Contractors  
 Providing Solutions to Difficult Projects

107 S Kimball Avenue Suite 275 • Caldwell, ID 83605

Phone: (916) 351-0457 Fax: (916) 351-1674

Contact: Adam Simmons • Email: [adams@srco.com](mailto:adams@srco.com) / [estimating@srco.com](mailto:estimating@srco.com)

Sub-Bids Requested From **MBE, DBE, WBE** Subcontractors & Suppliers for:

**Solid Waste System Improvements Project #1-15140**

**Location: Thompson Falls Montana**

**Bid Date: March 5th, 2019**

### Trades Solicited:

SAFETY, ASPHALT, CONCRETE & CEMENT, STEEL, PAINT, FENCING, GUARD RAILINGS & BARRIERS, GLASS & GLASS BLOCK, CLEARING & GRUBBING, STRUCTURE EXCAVATION, STRUCTURE BACKFILL, HYDROSEEDING, EROSION CONTROL, FINISHING ROADWAY, PAVING ASPHALT (ASPHALT CONCRETE), CONCRETE STRUCTURE, JOINT SEAL - WATER STOP, REINFORCING STEEL, FILTER FABRIC, DOWNDRAIN, CONCRETE CURB & SIDEWALK - MISC, FENCING, LIGHTING, ELECTRICAL, GLASS INSTALLATION, BUILDING CONSTRUCTION, CARPENTRY, LAND SURVEYING, CRANE WORK, ROOFING, PLUMBING, PAINTING STRUCTURES, INSULATION, HARDWARE (ROUGH), HARDWARE (FINISH).

If a portion of the work is too large for you to handle, contact us and we will try and break it into smaller portions

Subcontractors and suppliers must be licensed to conduct business in the state of Montana. Must be able to provide payment and performance bonds provided by approved surety company. SRC will pay bond premium up to 1.5% of subcontract amount and will assist with insurance compliance. SRC will work with subcontractors on joint check agreements. Plans and specs are available for viewing at our Folsom office and upon request will provide FTP site for electronic viewing of project.

Bonding, insurance, lines of credit and any technical assistance or information related to the plans or specifications for the work will be made available. Assistance with obtaining necessary equipment, supplies, materials, or related assistance or services for this project will also be offered.

## SBE OUTREACH SERVICES

With 1.5 million businesses in our database, SBE is California's #1 source for diversity outreach.

### Advertisements

Placed in the Small Business Exchange newspaper, SBE Today newsletter, and online at [www.sbeinc.com](http://www.sbeinc.com)

### Faxed and Eblast Solicitations

Targeted mailings sent to businesses per your criteria.

### Telemarketing

Telephone follow-up calls that follow a script of 5 questions you create.

### Computer Generated Reports

Will fit right into your proposal, along with a list of interested firms to contact.

### Contact Info:

**795 Folsom Street, 1st Flr, Room 1124**

**San Francisco, CA 94107**

**Email: [sbe@sbeinc.com](mailto:sbe@sbeinc.com)**

**Website: [www.sbeinc.com](http://www.sbeinc.com)**

**Phone: (415) 778-6250, (800) 800-8534**

**Fax: (415) 778-6255**

### Publisher of

**Small Business Exchange**

**weekly newspaper**



# California Sub-Bid Request Ads



**SYBLON REID**  
General Engineering Contractors  
Providing Solutions to Difficult Projects

P.O. BOX 100 Folsom, CA 95763  
Phone: (916) 351-0457 Fax: (916) 351-1674  
Contact: Brad Schieckoff or Ryan Fox

Sub-Bids Requested From **MBE, DBE, WBE** Subcontractors & Suppliers for:

**Job Name: City of Biggs Phase II WWTP Improvement**  
**Contract No: 19-01**  
**Base Bid Amount: \$5,761,500**  
**Bid Opening Date: 3/13/2019 @ 2:00PM**

**Trades Solicited:**

SAND & GRAVEL, CONCRETE & CEMENT, REINFORCING BAR SECTION, PIPE, FENCING, ELECTRICAL & SIGNALS, CONSTRUCTION STAKING, CLEARING & GRUBBING, GRADING, STRUCTURE EXCAVATION, STRUCTURE BACKFILL, DITCHES EXCAVATION, EMBANKMENT CONSTRUCTION, IMPORTED BORROW, HYDROSEEDING, EROSION CONTROL, AGGREGATE BASE, MINOR CONCRETE STRUCTURE, ELECTRICAL, TRUCK BROKER, HEAVY EQUIPMENT RENTAL, DEMOLITION

If a portion of the work is too large for you to handle, contact us and we will try and break it into smaller portions

Subcontractors and suppliers must be licensed to conduct business in the state of California. Must be able to provide payment and performance bonds provided by approved surety company. SRC will pay bond premium up to 1.5% of subcontract amount and will assist with insurance compliance. SRC will work with subcontractors on joint check agreements. Plans and specs are available for viewing at our Folsom office and upon request will provide FTP site for electronic viewing of project.

Bonding, insurance, lines of credit and any technical assistance or information related to the plans or specifications for the work will be made available. Assistance with obtaining necessary equipment, supplies, materials, or related assistance or services for this project will also be offered.

Sub-Bids Requested from qualified DBE Subcontractors and Suppliers For:

**NORTH CITY PURE WATER PIPELINE**  
**Owner: City of San Diego**  
**Location: San Diego, CA**  
**Bid Date: March 26, 2019 @ 2:00 P.M.**

**J.F. Shea Construction, Inc.**  
667 Brea Canyon Road, Suite 30 • Walnut, CA 91789  
Phone: (909) 595-4397, Fax: (909) 444-4268  
Contact: Lori Olivas, [lori.olivas@jfshea.com](mailto:lori.olivas@jfshea.com)

J.F. Shea Construction, Inc. is soliciting your participation in the preparation of this bid. We are particularly interested in bids from subcontractors/suppliers for the following work items:

Demolition, Geotextiles, Aggregates, Curb & Gutter, Landscape, Precast Concrete, Ready-Mix Concrete, Reinforcing Steel, Masonry, Welding, Structural Steel, Steel Decking, Miscellaneous Metals, Waterproofing, Insulation, Metal Panel Tile Roofing, Sheet Metal, Sealants, Metal Doors/Frames/Hardware, Overhead Coiling Doors, Louvers, Painting & Coatings, Signage, Fire Protection Specialties, HVAC, Equipment, Electrical & Instrumentation, and Cathodic Protection

**Plans and Specifications:** Contract Documents may be obtained by visiting the City's website: <http://www.sandiego.gov/cip/>. Plans may also be viewed at the Dodge Plan Rooms or at our Walnut Office.

J.F. Shea Construction, Inc. is an equal opportunity employer and intends to negotiate in good faith with interested DBE firms and intends to utilize the lowest responsive bidder. J.F. Shea expects potential subcontractors to be bondable. J.F. Shea will pay for up to 1% for subcontractor bond costs. Subcontractors and Suppliers are expected to bid per plans and specifications, including requirements for warranties. Standard manufacturer's warranties, if not in conformance with owner's specifications, will not be accepted.



**Kiewit**

**Kiewit Infrastructure West Co.**  
4650 Business Center Drive Fairfield, CA 94534  
Attn: Victor Molina • [norcal.bids@kiewit.com](mailto:norcal.bids@kiewit.com)  
Fax: 707-439-7301

Requests quotes/bids from qualified Subcontractor, Service Providers, Consultants, and/or Suppliers seeking to participate in the East Bay Municipal Utility District, Aerated Grit Tanks and Gallery Improvements Project in Oakland, CA.

<http://www.dgs.ca.gov> / [http://www.dot.ca.gov/hq/bep/find\\_certified.htm](http://www.dot.ca.gov/hq/bep/find_certified.htm) /  
<http://www.acgov.org/auditor/sleb/> /  
<http://sf-hrc.org/> /  
<http://www.portofoakland.com/srd>

Subcontractors and Suppliers for the following project:

**Aerated Grit Tanks and  
Gallery Improvements Project**  
**Specification No. SD-39**  
**Owner: East Bay Municipal Utility District**  
**Bid Date: March 6, 2019 @ 1:30 P.M.**

**Disadvantaged Business Enterprises (DBEs)**

Minority Business Enterprise (MBE), Women Business Enterprise (WBE), Small Business Enterprise (SBE), Disabled Veteran Business Enterprise (DVBE) and all other small/local business enterprises wanted for the following scopes, including, but not limited to:

Asbestos Abatement, Concrete Supply, Concrete Reinforcement Supply & Install, Cast in Place Concrete, Demo, Dewatering, Electrical, Injection Grouting, Metals, Painting & Coatings, Piping, Pipe & Valve Supply, Shoring, Waterstops, Survey, Trucking & Hauling, Street Sweeping and Water Truck.

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 DBE, MBE, SBE, DVBE and all other small/local business enterprise 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  
March 1, 2019 and Quotes NO LATER THAN  
March 5, 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 to be able to receive bidding information, Plans and Specifications.

Contract Equity Program applies.

Performance and Payment Bonds may be required for Subcontractors and Supply Bonds for Suppliers on this project.

**An Equal Opportunity Employer**

CA Lic. 433176  
DIR # 1000001147

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a PDF version of the latest  
SBE Newspaper and SBE Newsletter**

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EXCHANGE



# California Sub-Bid Request Ads

## nibbi

**Project Name:** Pier 70 E2 Design-Build SHW & Elevators

**Location:** San Francisco, California

**Bid Date:** Thursday, March 14, 2019 @2pm  
**Pre-Bid Meeting:** February 28, 2019 @ 10AM

**Location:** Nibbi Office,  
1000 Brannan Street, Suite 102

**Labor Requirements:** This project is subject to a Project Stabilization Agreement (Labor Agreement) and Prevailing wage provisions.

**Project Schedule:** July 2019 – June 2021

Nibbi Brothers has been selected as the General Contractor for the Pier 70 Building E2 project in San Francisco, CA. We are in receipt of the 100% DD Set and are currently requesting bid proposals from subcontractors and suppliers including those certified with the San Francisco Contract Monitoring Department (CMD) as local business enterprises (LBE's) Design-Build Solar Hot Water & Elevators. **Please note that All subcontractors will be required to comply with the following requirements by the Port of San Francisco:**

- 17% LBE Disadvantaged Business (LBE) goal.
- The Project is subject to MBE/WBE/VE participation goals in accordance with the Developer's Diversity Program with a goal of 10% participation.
- 30% of total construction hours performed by SF residents.
  - Consistent with Local Hire Program.
  - Contractor agrees to work with the Office of Economic and Workforce Development (OEWD) and local partner Young Community Developers (YCD).
- 50% new hires for employment opportunities in the construction trades and any Entry-level Position.
  - Contractor agrees to work in Good Faith with the Office of Economic and Workforce Development (OEWD).
- Pier 70 desires to engage contracting teams that reflect the diversity of our City and include participation of both businesses and residents from the City's most disadvantaged communities including, but not limited to, the neighborhoods in the 94107, 94124, and 94134 zip codes.

The project consists of new construction of Type III-A fully sprinkler construction for 5 stories of R-2 residential over 2 story Type IA above grade group R-2 residential, Group M Retail and A-2 Restaurant in San Francisco with a total of 244,502 gross square feet. Includes one floor of below grade parking for 105 automobiles, retail space at ground floor, and 7 Story residential building containing 275 dwelling units.

To get access to the bid documents, please contact Kristin Medwick, Senior Precon & Estimating Coordinator via email, [kristinm@nibbi.com](mailto:kristinm@nibbi.com).

For specific questions regarding this project, please contact Jordan Drake, Project Manager via email, [jordand@nibbi.com](mailto:jordand@nibbi.com).

### REQUESTING DVBE COMPANIES

FOR THE FOLLOWING PROJECT:

#### PROJECT:

HERMAN LEIMBACH ELEMENTARY SCHOOL,  
PROPOSITION 39 UPGRADES

#### OWNER:

ELK GROVE UNIFIED SCHOOL DISTRICT

#### LOCATION:

8101 GRANDSTAFF DRIVE,  
SACRAMENTO, CA 95823

#### BID DATE:

MARCH 5, 2019 @ 2:00 p.m.

#### Bids should be sent to:

[estimating@carterkelly.com](mailto: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](mailto:robynk@carterkelly.com)

### REQUESTING DVBE COMPANIES

FOR THE FOLLOWING PROJECT:

#### PROJECT:

JOSEPH KERR MIDDLE SCHOOL,  
HVAC & ROOF REPLACEMENTS

#### OWNER:

ELK GROVE UNIFIED SCHOOL DISTRICT

#### LOCATION:

8101 GRANDSTAFF DRIVE,  
SACRAMENTO, CA 95823

#### BID DATE:

FEBRUARY 28, 2019 @ 2:00 p.m.

#### Bids should be sent to:

[estimating@carterkelly.com](mailto: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](mailto:robynk@carterkelly.com)

## 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](http://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:

**THE PAVEMENT REHABILITATION OF NORTH LIVERMORE AVENUE FROM THE LIVERMORE CITY LIMIT TO MANNING ROAD – MURRAY TOWNSHIP, ALAMEDA COUNTY, CALIFORNIA**  
Specification No. 2337,  
Minority/Women-Owned Business Enterprise  
Goal Assigned is 15% MBE and 5% WBE

OWNER

COUNTY OF ALAMEDA –  
951 Turner Court, Room 300,  
Hayward, CA 94545

**BID DATE: FEBRUARY 26, 2019 @ 2:00 P.M.**

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

ADJUST IRON, CMP PIPE SUPPLIER, COLD PLANE, ELECTRICAL, EMULSION SUPPLIER, EROSION CONTROL, FABRIC/GEOSYNTHETIC PAVEMENT INTERLAYER, MINOR CONCRETE, PAVEMENT MILLING, REINFORCED CONCRETE PIPE, JACKED REINFORCED CONCRETE PIPE, CORRUGATED METAL PIPE, ROADWAY EXCAVATION, RUMBLE STRIP, STRIPING, UNDERGROUND, TRUCKING, WATER TRUCKS, STREET SWEEPING, CLASS 4 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@desilvagates.com](mailto:ftp@desilvagates.com) and password is [f7pa55wd](mailto:f7pa55wd)) or from the Owner's site at [www.ipdservices.com/clients/eastbay/index.html?alco&Show=Planroom](http://www.ipdservices.com/clients/eastbay/index.html?alco&Show=Planroom)

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/Public-Works.html](http://www.dir.ca.gov/Public-Works/Public-Works.html)

If you need M/WBE 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](http://www.transportation.gov/osdbu/SBTRCs)). DGC is willing to breakout portions of work to increase the expectation of meeting the M/WBE 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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to download a PDF version of the  
latest SBE Newspaper and  
SBE Newsletter



# California Sub-Bid Request Ads



(An Equal Opportunity Employer)

## Animal Care & Control Project

Clark Construction has released a Request for Proposal (RFP) to pre-qualified prime bidders for acoustical ceilings, ceramic tile, cold storage rooms, fences & gates, lab casework/casework, overhead coiling doors, painting & concrete sealer, polished concrete, resinous flooring, specialties and animal equipment.

For subcontractors interested in lower-tier opportunities on the above scopes, please contact Rachel Browne for the list of pre-qualified prime bidders.

The RFP files can be accessed via Box at the link provided below:

<https://clarkconstruction.box.com/v/sface>

**Bid Due Date: 3/14/19 2:00 pm**

**Clark Construction Group- California, LP**

Contractor License #839892

180 Howard Street, Suite 1200, San Francisco, CA 94105

Contact: Rachel Browne

Phone: (628) 333-1597

[rachel.browne@clarkconstruction.com](mailto:rachel.browne@clarkconstruction.com)

**CAHILL CONTRACTORS LLC requests bids from Certified SBE Subcontractors and Suppliers for the following DESIGN-BUILD trades:**

Fire Sprinkler / Solar / Exterior Building Maintenance /

Fire Alarm (Design Only)

**1064 MISSION STREET - DESIGN-BUILD BID  
1064 Mission Street, San Francisco, CA 94103**

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

**BID DATE: 3/18/19 @ 2 PM**

**BID DOCUMENTS:**

Please contact Colby for access to documents on BuildingConnected.

**CONTACT:**

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

## Will Heavy Construction Equipment Go All-Electric?

### Continued from page 1

The EX2 uses two lithium-ion batteries that deliver 38kWh and can operate for eight hours. The excavator has no hydraulics, instead, it uses electromechanical linear actuators to power the boom and implements.

Volvo CE is pressing forward with its electrification plans with four new electric compact excavators and wheel loads on the way. That number will expand as the company has promised to stop development on their entire line diesel-based engines for their compact wheel loaders and excavators in 2020. Their EC15 – EC27 compact excavators and L20 – L28 wheel loaders will all be produced with battery-powered drivetrains.

### Bobcat

Bobcat unveiled the prototype for their E10e electric mini excavator back in 2016. The excavator was developed at Bobcat's innovation center in Dobris, Czech Republic. The E10e can run for a full for an eight-hour day on its lithium-ion batteries when coupled with an external supercharger with normal work breaks factored in. The excavator takes just two and a half hours to charge.

### JCB

JCB launched their first all-electric excavator last year. The 19C-1 E-Tec is a 2-ton excavator that can work all day on a six-hour charge. The excavator uses an electric motor and three lithium-ion batteries to deliver 15kWh of power. An optional fast charger will be available and can cut the charging time in half.

The 19C-1 E-Tec will feature the same speed and power as its diesel counterpart, the 19C-1, but with the added benefit of generating greater torque which it can do instantly. The electric motor will also power the load-sensing hydraulic system from Bosch Rexroth.

### Caterpillar

Pon Equipment, with input and support from Caterpillar, converted a 28-ton CAT 323F excavator from diesel to electric. The diesel engine was replaced with a 122kW electric motor and a 300kWh lithium-ion battery pack that weighs 3.4 tons.

Known as the Z-Line, the modified excavator can work for five to seven hours before needing to be recharged which can be done in one to two hours. Pon Equipment has already sold its first model to a construction company in Norway that is planning to buy more.

Caterpillar Venture Capital, the venture arm of Caterpillar, has also invested in Fisker, a company making electric cars and developing battery technology. Fisker is using the investment to work on the development of solid-state batteries for use in construction, mining, and other applications.

### Wacker Neuson

Wacker Neuson has an existing lineup of zero emissions machines including two electric wheel loaders, two battery-powered rammers, and a dual-power excavator. Last year, they debuted their first battery-powered mini excavator, the EZ17e, which will be available in Europe later this year.

The EZ17e runs on lithium-ion batteries but can also be plugged into a regular power outlet or high voltage outlet to run the machine and charge it while it operates. The EZ17e can provide seven hours of power and charges overnight on a household outlet and in four hours if plugged into a high voltage current.

### Hyundai CE

Hyundai CE has partnered with Cummins to develop electric heavy equipment. Their first offering is a battery-powered mini excavator. The excavator is powered by eight flexible battery modules supplied by Cummins.

The BM4.4E battery modules provide 35.2 kWh of total energy and can work an eight-hour shift before needing to be recharged. Charging can be done in just under three hours.

While most of the examples listed above are focusing on mini and compact models, we'll likely see the electrification of larger models being developed over the next few years. Battery storage, faster charging cycles, output, and power are some of the obstacles that manufacturers will have to tackle

Autonomy, artificial intelligence, software, power management systems, and replacing hydraulics with electric actuators will all be used in combination with the redesign of many types of equipment to provide the efficiency and power of their diesel counterparts.

### SOURCE:

<https://www.constructconnect.com/blog/construction-technology/electric-dreams-will-heavy-construction-equipment-go-electric/>