



Metro

Los Angeles County
Metropolitan Transportation Authority

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**CONSTRUCTION COMMITTEE
FEBRUARY 20, 2014**

**SUBJECT: PHOTOVOLTAIC (PV) PANEL SOLAR ENERGY SYSTEM AT THE
DIVISION 13 BUS MAINTENANCE AND OPERATIONS FACILITY
(DIVISION 13)**

ACTION: AUTHORIZATION FOR CONTRACT MODIFICATION

RECOMMENDATION

- A. Authorize the Chief Executive Officer (CEO) to negotiate and execute a contract modification to Contract C0974 with McCarthy Building Companies, Inc., for the integration of a PV energy system into the Division 13 project in an amount not-to-exceed \$1,921,223, increasing the total contract value from \$75,123,179 to \$77,044,402.
- B. Approve an increase in Contract Modification Authority (CMA) for Contract No. C0947 in the amount of \$1,921,223, increasing the total CMA from \$7,336,480.30 to \$9,257,703.

ISSUE

This action is required to engineer, procure and construct the Division 13 PV Panel Solar Energy System which will generate approximately 271 kilowatts (kW) (0.271 megawatts [MW]) of PV energy. The original Division 13 design included PV panels; however, they were value engineered out of the contract documents due to funding limitations. Since that time, Metro staff has vigorously pursued funding and design options to reincorporate the PV panels into Division 13, including applying and successfully winning a grant from LADWP in the amount of \$275,000. The grant funds, in combination with new Metro Bus Division Efficiency Funds of \$1,646,223 (described below), will allow Metro to incorporate the PV panels seamlessly back into the project. The PV panels will be incorporated on to the garage ribbon roof and the south façade structure.

Staff recommends proceeding with the PV panel installation now that new sources of funds are available and the opportunity to save cost by installing the PV panels while the project is under construction. Metro will issue a change order to McCarthy to integrate the work back into the Division 13 project. Additional CMA authority is needed

to execute the change order and enable the implementation of the Division 13 PV Panel Solar Energy System.

BACKGROUND

In FY 2014 the Board approved Metro's Renewable Energy Policy, which requires that new facilities consider the installation of renewable energy to meet a 33% renewable energy use goal by 2020. The policy identifies new construction projects as the most viable cost-effective locations for the installation of such projects. PV panels on the rooftop and exterior façade were designed into the Division 13 facility; however, in an effort to cut project costs the PV panels were eventually deleted from the construction contract. See Attachment C for a chronology of the Division 13 PV System.

In addition, Division 13 recently received Los Angeles Department of Water and Power's (LADWP) Solar Incentive Program (SIP) funds to support the project and the Board approved the *Metro Bus Division Energy Efficiency Project*; a capital project dedicated to energy efficiency and PV panel improvements at Metro bus facilities that provides a new source of funding for the Division 13 PV System.

The proposed Division 13 PV Solar Energy System is estimated to generate over 550,000 kilowatt hours (kWh) per year, which will reduce electric utility cost by approximately \$67,000 annually. Dependent on the final negotiated change order cost, and considering the LADWP rebate, the simple payback for the proposed Division 13 photovoltaic system will range from 22 to 26 years. Over the 30 year life of the equipment, the PV panels will save Metro approximately \$1,805,703.

Metro currently operates about 2.5 megawatts (MW) of PV panels of which 2 MW were installed at Divisions 8, 15, 18, and Central Maintenance Facility. Metro's Renewable Energy Policy was adopted by the Board in 2011 and has set a goal of 33% renewable energy use by 2020. Since adoption, an additional 0.5 MW PV panel installation at the El Monte Station has been completed. Other renewable energy projects are underway including the FTA funded Red Line/Purple Line energy storage Wayside Energy Storage System (WESS) and the South Coast Air Quality Management District funded Gold Line voltage regulating WESS. These projects are at least one year away from full implementation.

The use of a fully operational renewable energy portfolio in six of our facilities results in an overall operational cost savings of \$423,360. The Division 13 PV panel installation will result in an additional 16% operational cost savings due to avoided utility energy use.

Considering only Metro generated energy, we currently use a total of 1.20% renewable energy in our facilities. Once fully operational, the Division 13, Gold Line Wayside Energy Storage System, and Red Line Wayside Energy Storage System will increase our renewable energy use to 1.75%, a 46% increase over current use.

Metro staff is currently conducting investment grade audits of all of our facilities to determine which other facilities can also be used for such installations. PV panel maintenance is currently being conducted by either staff or through contracted services. Staff is also considering more cost-efficient operations and maintenance options to ensure optimum long-term renewable energy/PV panel efficiency.

Renderings of the Division 13 project showing the ribbon roof and PV panels on the south façade are included as Attachment D.

SAFETY IMPACT

This recommended action has no impact on safety.

FINANCIAL IMPACT

This action will not have any impact on the Division 13 LOP budget (CP 202001). Funding for this cost increase will be provided by the FY14 Bus Division Energy Efficiency Capital Project (CP 202802) in the amount of \$1,646,223 and from rebates in the amount of \$275,000 from the Los Angeles Department of Water and Power's Solar Incentive Program; for a total of \$1,921,223.

ALTERNATIVES CONSIDERED

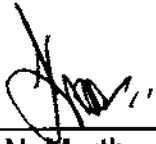
The Board may choose not to authorize the installation of these PV panels. This alternative is not recommended. Such an action will result in additional challenges to meeting our renewable energy use goal by 2020, result in lost opportunity costs to install PV panels while the project is under construction and reduce future energy cost increases associated with Division 13 operations.

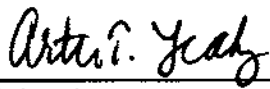
ATTACHMENTS

- A. Procurement Summary
- B. Contract Modification/Change Order Log
- C. Division 13 PV System Chronology
- D. Division 13 and PV Panel Project Renderings

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ATTACHMENT A

**PROCUREMENT SUMMARY
Division 13 Bus Maintenance and Operations Facility**

1.	Contract Number: C0974, Division 13 Bus Maintenance and Operations Facility		
2.	Contractor: McCarthy Building Companies, Inc.		
3.	Modification Work Description: Integration of a PV energy system into the Division 13 project.		
4.	The following data is current as of: January 10, 2014		
5.	Contract Completion Status:		
	Bids Opened	9/20/11	% Completion \$'s 38%
	Contract Awarded	4/30/12	% Completion Time 61%
	Notice to Proceed (NTP)	7/23/12	Orig. Contract Days 700
	Orig. Completion Date	6/23/14	Change Order Days 186
	Current Estimated Comp Date	10/24/14	Suspended Days 0
			Total Days 886
6.	Financial Status:		
	Contract Award Amount		\$73,364,803
	Approved Contract Changes		\$2,645,586
	Current Contract Value		\$76,010,389
	Pending Changes (including this request)		\$2,796,338
	New Total Contract Value		\$78,806,727
7.	Contract Administrator: Deborah Spottsville Senior Contract Administrator	Telephone Number: (213) 922-1040	
8.	Project Director: James Gleig, Director Construction Management	Telephone Number: (213) 922-7453	

A. Procurement Background

This contract change will be handled in accordance with the LACMTA approved procedures for contract modifications.

On April 30, 2012, Contract No. C0947 was awarded to McCarthy Building Companies, Inc., in the amount of \$73,364,803; for construction of the Division 13 Bus Maintenance and Operations Facility, the lowest responsive and responsible bidder,

Attachment B shows that 46 modifications have been issued to add and/or delete work and six modifications are currently in negotiation.

The proposed modification is for an amount not-to-exceed \$1,921,223.

B. Cost/Price Analysis

The price for this change will be determined to be fair and reasonable in accordance with Metro Procurement Policies and Procedures. The negotiation process will include, but not be limited to, clarification, fact-finding, technical analysis, cost analysis and discussions. Metro staff will complete an Independent Cost Estimate prior to initiating negotiations with McCarthy.

Item No.	Changes	Proposed Amount	MTA Estimate	Not-to-Exceed Amount
1.	Integrate PV Energy System	TBD	TBD	\$1,921,223

C. Small Business Participation

McCarthy Building Companies has a Disadvantaged Business Enterprise (DBE) Anticipated Level of Participation (DALP) commitment of 1.42%. Current DALP participation is 0.93%. Meeting the DALP is neither a condition of award nor an issue of responsiveness.

SMALL BUSINESS COMMITMENT	1.42% DALP	SMALL BUSINESS PARTICIPATION	0.93% DALP
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	Subcontractor	% Committed	Current Participation ¹
1.	Interclean Equipment, Inc.	0.19%	0.00% ²
2.	MB Professional Services	1.23%	0.93%
	Total Commitment	1.42%	0.93%

¹Current Participation = Total Actual amount Paid-to-Date to DBE firms ÷ Total Actual Amount Paid-to-date to Prime.

²No longer a DBE

D. All Subcontractors Included with Contractor's Bid

#	SUBCONTRACTOR	SERVICES PROVIDED
1	ABC Striping	Asphalt Paving & Striping & Marking
2	Aero Automatic Sprinkler Co.	Fire Protection
3	Air & Lube	Install only - Vehicle Wash
4	Amano McGann Inc.	Parking Controls
5	Aluma Systems	Formwork and shoring
6	Associated Ready Mix	Ready mixed concrete
7	Athena Engineering Inc.	HVAC & Controls
8	B&I Equipment	Equipment
9	Bapko Metal Inc.	Structural & Misc. Steel
10	Bayside Interiors Inc.	Raised Access Flooring
11	Berg Electric	Electrical
12	Best Contracting Services	Traffic Coating
13	Bryton Engineering & Grading dba Premiere Engineering	Earthwork
14	California Signs Inc. dba CA Signs	Signage
15	Canyon Insulation, Inc.	Building Insulation
16	Clean Air Technologies oa Eurovac	Vacuum Equipment
17	CM Construction Clean up	General Clean-up
18	CMF, Inc.	Sheet Metal, Louvers, Skylights
19	CMC Rebar	Reinforcing Steel & PT Cable
20	Comet Electric, Inc	Traffic Signal
21	Danny Letner Roofing	Roofing & Waterproofing
22	H.L. Moe Co. Inc.	Plumbing
23	HPS Mechanical	Site Utilities
24	Hydro Engineering Inc.	Water Reclamation System
25	Interclean Equipment, Inc.	Vehicle Wash Systems
26	ISEC Inc.	Arch. Woodwork & Misc. Specialties
27	JLS Concrete Pumping	
28	L2 Specialties	Misc. Finishes
29	Marne Construction	Site Concrete
30	Masonry Concepts	Masonry

31	MB Professional Services Inc.	Inspection Services
#	SUBCONTRACTOR	SERVICES PROVIDED
32	McKinley Equipment Corp	Equipment
33	McMurray Stern	Storage Equipment & Lifts
34	Midori Landscape, Inc.	Landscape
35	Miller Environmental	Hazardous Materials
36	Mitsubishi Elevators	Elevators
37	Mobile Modular	Trailers
38	Montgomery Hardware	Door & Hardware
39	Mr. Crane	Equipment and Project Services
40	Overhead Door Corporation	Roll Up doors
41	Pecoraro Inc.	Painting
42	Performance Contracting Inc.	Acoustical Ceilings
43	Peterson Hydraulics, Inc.	Vehicle Shop Equipment
44	Pfeiler & Associates	Survey
45	Premier Tile & Marble	Ceramic Tile
46	S&S Construction Services	Construction services
47	Sashco Inc.	Aluminum & Glass
48	Sheward & Son and Sons	Shades
49	Shoring Engineers	Shoring
50	Sierra Lathing Company Inc.	Framing & Drywall
51	Signature Flooring Inc.	Flooring
52	Southwest Lift & Equipment	Install Only - Vehicle Lifts
	Star Machine & Tool (Bankrupt)	Vehicle Shop Equipment - Brake Lathe
53	Stertil-Koni	Vehicle Lifts P.O
54	Sunstate Equipment	Equipment P.O
55	The McIntyre Company	Metal Decking
56	Traffic Management Inc.	Traffic Control
57	U.S. Demolition	Building Demolition
58	Western Pump	Lube Equipment
59	Peri Formwork Systems	Rental P.O
60	Geovision	Consultant

ATTACHMENT B

CONTRACT MODIFICATION / CHANGE ORDER LOG

Mod. No.	Description	Status	Cost
1	Reduce retention to 5%	Approved	\$0
2	Delete sound wall/add ped gate PLA costs	Approved	\$27,662
3	Removal of unforeseen monitoring wells	Approved	\$12,438.98
4	Offsite AFC plans	Approved	\$0
5	Bus pad Non-compensable rain extension	Approved	\$27,821
6	Saturated soils at Metro Drive	Approved	\$14,278
7	Change in Allowance Language	Approved	\$0
8	Value Engineering Jellyfish Units	Approved	(\$72,487.82)
9	Demolition discrepancies water	Approved	\$6,778
10	Lubrication tank relocation	Approved	\$35,730
11	Bulletin 1 Plasma Cutter and VMC	Approved	\$301,999.
12	Irrigation lines for Bldg. 1	Approved	\$27,957.73
13	Backflow demolition and replacement	Approved	\$3,477.59
14	Bulletin 6 Adjustment to footing at Grid B-2	Approved	\$8,596.49
15	Administrative Changes	Approved	\$0
16	Adjustment to Quantities	Approved	\$463,818
17	Wiring and Phasing for ATS	Approved	\$7,382.
18	Shoring obstructions on Vignes St	Approved	\$21,911
19	BDP Switchboard Amperage	Approved	\$55,950
20	Existing street light conduits on Vignes St	Approved	\$10,027
21	Existing vault air pump & sump pump power	Approved	\$7,361

Mod. No.	Description	Status	Cost
22	Sample box at underground tanks	Approved	\$1,921
23	Rebar for 12" thick wall at water tank #2	Approved	\$17,303
24	Unforeseen soil conditions at Vignes St.	Approved	\$33,817
25	Keller St. Driveway Approach	Approved	\$38,396
26	- Bulletin 7 Transp. Bldg. Windows - TIA #2 Compensable Time Extension - Sub-soil drainage dewatering pump	Approved	\$96,737
27	- Bulletin 2 Relocated water lines - Bulletin 4 Reserved Parking - TIA #1 Non-Compensable Time Extension	Approved	(\$3,053.22)
28	- Bulletin 5 Overhead Doors - Obstructions on Vignes - Gas line relocation	Approved	\$186,574
29	- Bulletin 8 Water Capture at Jail Wall - Reduced Pressure Principle Assembly	Approved	\$81,685
30	Temp power for FACP cabinet	Approved	\$42,960
31	Bulletin 13 Shoring at Grid 12 (Diamond Building), Footing Redesign	Approved	\$78,646
32	Soil & groundwater at Diamond Bldg.	Approved	\$52,441
34	- SD Manhole 55 - Repair Existing Corroded Water Line	Approved	\$8,987
35	Import for Backfill - Chatsworth	Approved	\$181,939
36	Import for Backfill - 405 Fwy	Approved	\$101,627
37	Temp. Power for Radiator Shop	Approved	\$6,964
38	TIA #4 Compensable Time Extension	Approved	\$153,440
39	- Propane and Oxygen for Radiator - Floor Drain for 6" ASR	Approved	\$38,111
40	- Intake Air Duct to Water Heater A1 - Mechanical Duct Relocation for FCU	Approved	\$12,134
41	- Shear Wall Dimension and Openings - H Line Wall Thickness	Approved	\$10,951
42	LADWP Utility Yard Switchgear	Approved	\$300,010

Mod. No.	Description	Status	Cost
43	- VFD for Supply Fans - Bracing of Walls at GL 11 - Power to Boil Out Tank	Approved	\$35,600
44	- Storm & Domestic Water - Gas pressure vent lines - Oil, water separator, EQ 2236	Approved	\$15,150
45	- Rebar Size at Concrete Slab Level 1 - Electrical, Exhaust Venting and - Duct Collection to New Plasma Cutter Table	Approved	\$85,987
47	TIA #5 Compensable Time Extension	Approved	\$85,168
48	Radiator shop containment basin	Approved	\$21,390
33	Rev Fire Sprinkler Hazard Class	Pending	\$93,551
TBD	TIA #6 Compensable Time Extension	Pending	\$254,800
TBD	TIA #7 Compensable Time Extension	Pending	\$163,072
TBD	Photo-Voltaic Panels	Pending	\$1,921,223
TBD	Compensable Time Extension TIA #XX	Pending	\$350,000
TBD	Haul SC Gas Soils from TSA Site	Pending	\$13,692
Subtotal – Approved Modifications			\$2,645,586
Subtotal – Pending Changes/Modifications			\$2,796,338
Total Mods and Pending Changes (including this change)			\$5,441,924
Prior CMA Authorized by the Board (including base award and other modifications)			\$7,336,480
Increased CMA for this recommended action			\$1,921,223
Total CMA including this action			\$9,257,703
Remaining CMA for Future Change			\$3,815,779

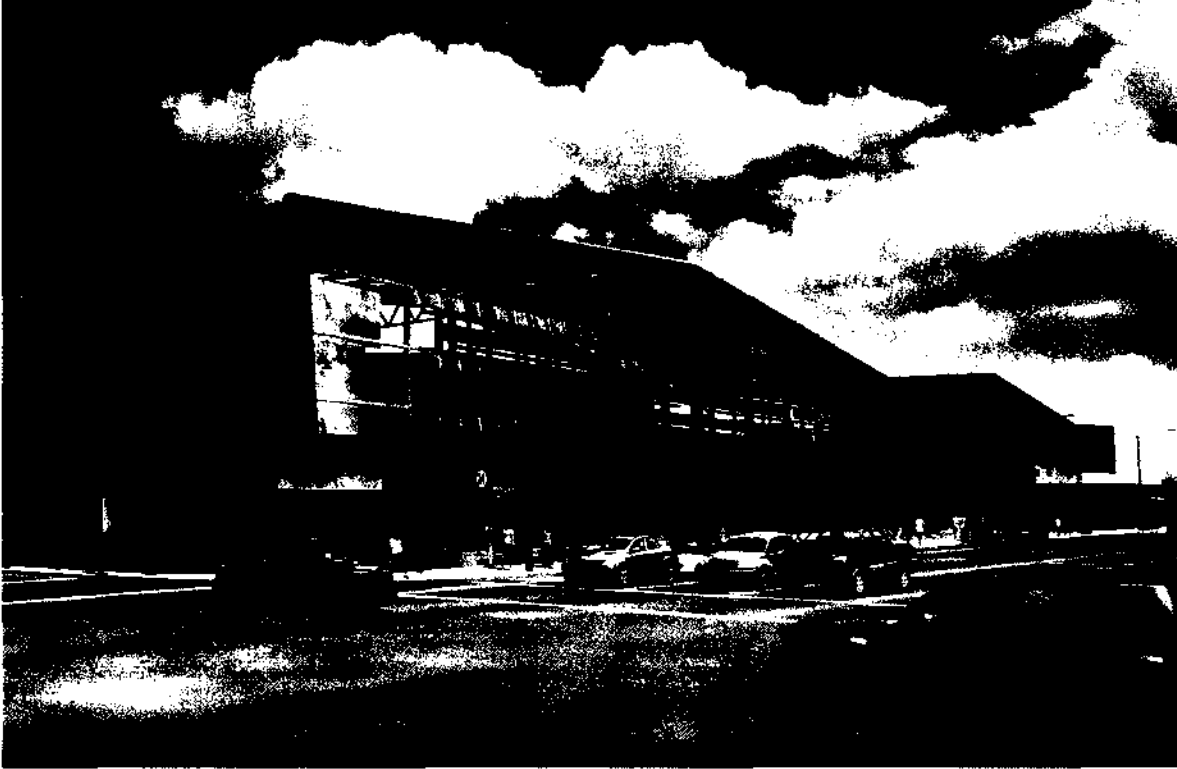
ATTACHMENT C

DIVISION 13 PV SYSTEM CHRONOLOGY

- In April 2011, Metro completed the PV System Design/Build concept of an approximate 500 kW PV System, including PV panels on Division 13 façade and rooftops as well as the Central Cash Counting Facility
- In May 2011, Metro issued an Invitation for Bid for Division 13 that included the PV System as a deductive Bid Option
- In September 2011, Metro held the Division 13 public bid opening
- In April 2012, Metro staff did not select the PV System bid option due to funding limitations
- In July 2012, Metro issued a Notice-to-Proceed to McCarthy Building Companies with no PV System
- In November 2012, in advance of upcoming LADWP renewable energy rebates Metro started redesign of an approximate 400 kW PV System to reincorporate the Division 13 PV System and have preliminary design for the LADWP rebate applications
- In February 2013, Metro applied for the LADWP Feed-in-Tariff (FiT) rebate, Round 1, and the Division 13 project was drawn in position #85 in the LADWP queue
- In June 2013, Metro applied for the LADWP FiT rebate, Round 2, and the Division 13 project was drawn in position #15 in the LADWP queue
- In July 2013, Metro applied for the LADWP Solar Incentive (SIP) rebate and the Division 13 project was accepted
- In FY 2014, the Board approved CP202802 for energy efficiency and PV panel improvements at Metro Bus facilities
- In December 2013, Metro and McCarthy completed 95% design for an approximate 271 kW Division 13 PV System based on availability of new funding from CP202802
- In February 2014, Metro staff seeks Board approval for the Division 13 PV System and increase the CMA to execute a Change Order with McCarthy to re-integrate the PV System back into the project

ATTACHMENT D

Division 13 Project and PV Panel Renderings



South Facade



Ribbon Roof

