



# How Dr. Gladys West Made GPS Possible

By Swapna Krishna

The STEM fields are full of significant innovators who sadly never got the recognition they deserve. These people, many of whom are under-recognized female scientists, were pioneers in their fields. They achieved great things but didn't receive due credit because they were women of color (and often specifically Black women). In the 1950s and 60s, many Black women worked as engineers and "human computers," enabling the dawn of the space age and the era of modern computing.

Dr. Gladys West is one of STEM's hidden trailblazers. She helped develop technology that contributed to the creation of the Global Positioning System, or GPS, which revolutionized modern society. Her contributions have been hidden for too long. We're excited to discuss both Dr. Gladys West and the ins and outs of how GPS works.

**How Does GPS Work?**  
When we're going about our daily lives, we use GPS constantly but don't really think about

what it is. How does GPS work? The United States' GPS relies on a constellation of thirty-one satellites in Earth orbit (other countries have their own GPS systems), according to the FAA. They work in concert with ground stations that pinpoint the precise position of these satellites at any given time. Receivers are what we utilize (our phones, car infotainment systems, etc.) to access the GPS network.

Receivers are able to listen for signals from this satellite constellation. After communicating with a minimum of four separate satellites, they can pinpoint a user's location to within seven meters, with about ninety-five percent accuracy.

**Dr. West's Background**

Born in 1930 in rural Virginia, Dr. Gladys West was the daughter of Black sharecroppers and worked the fields as a child. She knew education was her way to a different life, so through hard work, she excelled and received a scholarship to college. She earned an undergraduate degree in mathematics and continued on to pursue a master's degree.



In 1956, she began her career at the United States Naval Weapons Laboratory. Her role was to collect and process data from satellites, which she used to help pinpoint their exact locations in space. This experience as a "human computer" helped

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**GSA Silvio J. Mollo Project**

**ATTENTION:**  
All Small Businesses, VOSB, SDVOB, HUBZone, SDB and WOSB (including Vendors & Suppliers)

**Turner**

IS HOSTING INFORMATION SESSIONS FOR THE GSA SILVIO J. MOLLO FEDERAL BUILDING PROJECT. JOIN US FOR A VIRTUAL SESSION AND IN-PERSON SESSION TO LEARN ABOUT THE PROJECT, UPCOMING BID PACKAGES AND SCHEDULE.

<b>SAVE THE DATE</b>	<b>Virtual Session:</b> Tuesday, 2/13/2024 11AM - 12PM EST <a href="#">Click to register</a>	<b>Scan to register:</b> 	<b>In-Person Session:</b> March 2024 Location and Time TBD <a href="#">Click to register</a>	<b>Scan to register:</b> 
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**Description of Project:**  
The GSA Silvio Mollo modernization project will renovate and provide new offices for the Criminal Division of the United States Attorney's office (USAO) for the Southern District of New York. The scope of the project includes a major rehabilitation of the existing 10 story building. This will also include demolition of all existing components down to the base structure, new MEP systems, a full interior fit-out, a new curtain wall and metal panel facade, enhanced security measures, and expansion of the existing building floor plates. The project is also pursuing LEED Platinum certification.

If you are interested in Turner Construction's Prequalification process and bidding information on this project, please email [gssilviomollo@tcco.com](mailto:gssilviomollo@tcco.com).

**Tutor Perini**

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**IS CURRENTLY SOLICITING COST PROPOSALS FROM QUALIFIED AND CERTIFIED MBE, WBE, AND SDVOB SUBCONTRACTORS, VENDORS, SERVICE PROVIDERS**

**George Washington Bridge—Rehabilitation of Structural Steel**  
PANYNJ Contract No. **GWB-244.287**  
Bid Date: **February 21, 2024**

**Brief description of work:**  
The work under this contract consists generally of rehabilitation of structural steel and concrete, removal of lead and asbestos-containing paint, repainting the underside of the lower level, replacement of maintenance travelers, center median upgrades, and related work at the George Washington Bridge lower level, and above the Hudson River, the New York City Park area, the New Jersey Palisades Interstate Park, and the vicinities thereof in New York and New Jersey. The work under Contract **GWB-244.287** consists generally of bridge maintenance, travelers' maintenance, repairs, testing, and system upgrades. **GWB-244.287M—Agreement to Perform Maintenance of the George Washington Bridge Maintenance Travelers and Associated Systems.**

**Participation goals: 20% MBE, 10% WBE, and 3% SDVOB**

**ALL QUOTATIONS ARE DUE BY CLOSE OF BUSINESS Wednesday, February 14, 2024.** For further information concerning subcontracting and/or purchasing opportunities, and to register as a subcontractor or vendor, please respond to solicitations@tutorperini.com or contact Arlene McBayne at (914) 739-1908. Come and join our team!

**J.F. Shea Construction, Inc.**  
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**J. F. SHEA CONSTRUCTION, INC.**  
**BIDDING OPPORTUNITY**

**City of Valhalla, New York, with the following certifying authority: SBA, DOT, New York State, New Jersey, Connecticut**

**Inviting qualified contractors, specifically firms within New York State, to contact J. F. Shea Construction, Inc. (prime contractor listed below) regarding subcontracting services and material supply opportunities in connection with Tunnel and Shafts Project in the City of Valhalla, New York NYC DEP Contract No. KENS-EAST-1 Bid Date: March 28, 2024**

Opportunities to participate exist in the following specific areas of soil/rock excavation, hauling, excavation support systems, deep foundation system (slurry walls or secant piles, soldier beams), dewatering systems, structural steel, engineering, survey, geotechnical instrumentation and monitoring services, materials testing, demolition and site preparation, tree removal, aggregates and fill, traffic control, sewer tap and sewer bypass pumping, A/C paving, environmental investigation, utility relocation, paving, fencing and gates, planting and seeding, retaining wall, cured in-place concrete structures, cast-in-place pipe lining, reinforcing steel, ground stabilization, shotcrete, concrete finishing, miscellaneous metals, mechanical steel pipe, ventilation HVAC, precast concrete shaft covers, temporary office buildings/services, temporary electricians, waterproofing, service utilities, grouting, electrical/I&C, river bank stabilization, drilled shaft, pest control, IT services, waste disposal, cleaning services, and security.

Any business seeking to participate as a DBE in the contract that is not currently certified as set forth above is encouraged to contact the certifying authority for SBA, New York State, State DOT, New Jersey, or Connecticut to obtain current certification.

NYC DEP has an FTP site where you can view all plans, specifications, and addendums for your convenience. Please contact Aimee Remo at (909) 594-0990, [aimee.remo@jfshea.com](mailto:aimee.remo@jfshea.com), to receive instructions on accessing the FTP site.

**J. F. Shea Construction, Inc.**  
667 Brea Canyon Road, Suite 22  
Walnut, CA 91789  
Phone: 909-594-0990 Fax: 909-869-0827

**Send Inquiries/Certifications to Aimee Remo: [aimee.remo@jfshea.com](mailto:aimee.remo@jfshea.com)**

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**IS SOLICITING COST PROPOSALS FROM NEW YORK STATE DBE SUBCONTRACTORS AND VENDORS**

**Design-Build Services for LIRR West Side Yard Flood Mitigation Measures MTA Construction and Development Contract No. 6401 Bid Date: April 15, 2024**

**Description of project:**  
Design, furnish, construct, and install concrete perimeter flood walls, seepage cut-off barriers below the concrete flood walls, flood gates, deployable flood barriers, sump pumps, a tide gate chamber, drainage system improvements, workable aisles and a diesel generator, an automatic transfer switch, ancillary electrical equipment, and required communications.

This project will develop flood protection solutions for the West Side Yard in order to prevent and mitigate flooding of the LIRR Tunnels. The flood protection along the WSY perimeter will be accomplished via a combination of permanent flood walls and deployable flood barriers.

**Many bidding opportunities are available:** deep foundations, minipiles, jetgrout, sheeting, rebar installation, concrete supply, site work, electrical work, painting, paving, curb and sidewalk, site utilities.

If you are interested in bidding on this project, please contact Skanska's Diversity and Outreach Coordinator: [Aislinn.Speranza@skanska.com](mailto:Aislinn.Speranza@skanska.com) • EOE/M/F/Vet/Disabled

**J.F. Shea Construction, Inc.**  
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**J. F. SHEA CONSTRUCTION, INC.**  
**BIDDING OPPORTUNITY**

**Gateway Development Commission (GDC), with the following certifying authority: UCP of New York and New Jersey**

**Inviting qualified contractors, specifically firms within New Jersey and New York State, to contact J. F. Shea Construction, Inc. (prime contractor listed below) regarding subcontracting services and material supply opportunities in connection with Palisades Tunnel Project in GDC Bergen and Hoboken, New Jersey North Contract Bid Date: April 25, 2024**

Opportunities to participate exist in the following specific areas of soil/rock excavation, hauling, excavation support systems, deep foundation system (slurry walls or secant piles, soldier beams), dewatering systems, structural steel, engineering, survey, geotechnical instrumentation and monitoring services, materials testing, demolition and site preparation, tree removal, aggregates and fill, traffic control, sewer tap and sewer bypass pumping, A/C paving, environmental investigation, utility relocation, paving, fencing and gates, planting and seeding, retaining wall, cured in-place concrete structures, cast-in-place pipe lining, reinforcing steel, ground stabilization, shotcrete, concrete finishing, miscellaneous metals, mechanical steel pipe, ventilation HVAC, precast concrete shaft covers, temporary office buildings/services, temporary electricians, waterproofing, service utilities, grouting, electrical/I&C, river bank stabilization, drilled shaft, pest control, IT services, waste disposal, cleaning services, and security.

Any business seeking to participate as a DBE in the contract that is not currently certified as set forth above is encouraged to contact the Unified Certification Programs (UCPs), New York UCP—<https://nysucp.newnycontracts.com> and New Jersey UCP—<https://njucp.dbesystem.com> to obtain current certification.

J. F. Shea Construction, Inc., has an FTP site where you can view all plans, specifications, and addendums for your convenience. Please contact Aimee Remo at (909) 594-0990, [aimee.remo@jfshea.com](mailto:aimee.remo@jfshea.com), to receive instructions on accessing the FTP site.

**J. F. Shea Construction, Inc.**  
667 Brea Canyon Road, Suite 22  
Walnut, CA 91789  
Phone: 909-594-0990 Fax: 909-869-0827

**Send Inquiries/Certifications to Aimee Remo: [aimee.remo@jfshea.com](mailto:aimee.remo@jfshea.com)**

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**2024**

**8(a) Orientation and SAM Registration Webinar**  
Wednesday, February 21, 2024, 10:30 am–11:30 am Online  
Main Sponsor(s): US Small Business Administration  
Contact: [SBA Illinois District Office, 312-353-4528, illinois.do@sba.gov](mailto:SBA Illinois District Office, 312-353-4528, illinois.do@sba.gov)  
Fee: Free; registration required  
Join the Small Business Administration (SBA) Illinois District Office for a virtual workshop providing an overview of the 8(a) Business Development program, eligibility requirements, and program benefits. Also learn how to increase your potential for federal contract opportunities through System for Award Management (SAM) registration, including information that you need for the registration process. SBA presenters will offer additional tips, address FAQs, give directions on where to get further assistance, and answer your other questions. To register for this free webinar, visit <https://www.eventbrite.com/e/8a-orientation-sam-registration-tickets-518989961947>

**SBA and SOS Monthly Webinar**  
Thursday, March 7, 2024, 9:00 am–11:00 am Online  
Main Sponsor(s): US Small Business Administration, New Hampshire Secretary of State Corporation Division  
Contact: [miguel.moralez@sba.gov](mailto:miguel.moralez@sba.gov), [miguel.moralez@sos.gov](mailto:miguel.moralez@sos.gov)  
Fee: Free; registration required

Starting a new business? Looking for capital and finance options? Looking for general advice on starting or maintaining your business? Hear from representatives from the local SBA office and the New Hampshire Secretary of State Corporation Division. This workshop (currently held online during the pandemic) is offered on the first Thursday of every month. To join this free webinar, copy and paste the link below into your browser, then register for tickets for the date of your choice to receive the access code. <https://www.eventbrite.com/e/secretary-of-state-quickstart-and-small-business-administration-programs-tickets-262004180557>

**Selling to the Federal Government Webinar**  
Thursday, March 28, 2024, 1:00 pm–4:00 pm Online  
Main Sponsor(s): US Small Business Administration  
Contact: [George Tapia, 610-382-3086, george.tapia@sba.gov](mailto:George Tapia, 610-382-3086, george.tapia@sba.gov)  
Fee: Free; registration required  
Did you know that the federal government is the largest purchaser of goods and services in the world? Interested in learning how your business can market your services or goods to the federal government? Register on-line at <https://www.eventbrite.com/e/how-to-sell-to-the-federal-government-tickets-21790713611> SBA helps to ensure small businesses get fair opportunities to share federal government prime contracts. Topics will include: How to Register, Small Business Certifications, Finding Opportunities, Marketing Your Firm, Federal Supply Schedules, Getting Paid, Tips to Prepare Your Offer, How to Seek Additional Assistance. All training sessions are held via Microsoft Teams meeting. Participants must ensure Microsoft Teams is functioning.